



**PRIVATE TUTORING IN EGYPT:  
QUALITY EDUCATION IN A DEADLOCK BETWEEN  
LOW INCOME, STATUS, AND MOTIVATION**

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## Abstract

Egypt is facing a major challenge regarding the quality of its primary education. One of the crucial problems of the Egyptian education system is private tutoring. Private tutoring is not to be considered negative per se if it is based on the student's or parents' motivation to improve knowledge about the subject, even for competitive reasons. However, this paper focuses on a form of private tutoring, where a teacher deliberately reduces his teaching quality and either directly or indirectly forces students to participate in his private classes. Based on a large and original dataset, the paper identifies the main driving forces for this type of private tutoring and uses them to develop an analytical model. This model serves to formulate and evaluate a set of policies, which will help reduce private tutoring and improve the quality of primary education in Egypt.

## ملخص

تواجه مصر تحديا كبيرا في جودة التعليم الأساسي بها. وتمثل الدروس الخصوصية إحدى المشكلات المهمة التي يعاني منها نظام التعليم المصري. غير أن الدروس الخصوصية في حد ذاتها ليست أمرا سلبيا إذا كانت مدفوعة برغبة التلاميذ أو الأباء في تحسين فهمهم للمادة العلمية أو حتى بهدف التنافس مع زملائهم. وتحتيدا، تناقش هذه الورقة الدروس الخصوصية في الحالات التي يتعمد فيها المعلم تقليل جودة التدريس ومن ثم إجبار التلاميذ بصورة مباشرة أو غير مباشرة على تلقي دروس خصوصية لديه. وتستند الدراسة إلى مجموعة واسعة النطاق من البيانات الأصلية لتحديد الدوافع الرئيسية لظهور هذا النوع من الدروس الخصوصية، كما تستخدمها في إعداد نموذج تحليلي لصياغة وتقييم عدد من السياسات للعمل على الحد من الدروس الخصوصية وتحسين جودة التعليم الأساسي في مصر.

**Keywords:** teaching quality, primary education, private tutoring, policy design, evolutionary

**JEL classification:** C20, C51, C73, D02, I21, I25, E61

## 1. Introduction

The recent Global Competitiveness Report of 2014–2015 ranked Egypt 141/148 with respect to the quality of primary education (see CGR 2014-2015, 173). Being ranked thus far behind reveals that primary education is one of the most imperative problems facing the Egyptian government. A sustainable solution is vital to the future economic and social prosperity of Egypt, since its poor quality of primary education is threatening the basis for future innovation and competitiveness—two indicators where Egypt ranks similarly low (124th and 119th place, respectively).

An adherent by-product of the low quality of education is the need for private tutoring after class. Yet, it seems that private tutoring is not only a consequence of the poor quality of education in public schools, but is a deliberate and immanent property of the Egyptian educational system. Indeed, after-class tutoring is common worldwide and excessive practices of private tutoring can be observed in a number of countries; yet, the principal reasons differ. In Asian countries, parents are the main driver pushing children into after-class tutoring. This pattern is encouraged by excessive competition between students in most Asian countries in the strongly selective educational systems of these countries. Egypt, however, is a special case. Private tutoring is not only enforced by teachers, it is a systemic problem. Our data reveals private tutoring to be a practice that is encouraged by the underlying administrative system, the lack of checks and balances, and the broad acceptance of parents of this practice coupled with their high level of illiteracy. The reasons behind additional private tutoring are low teaching quality, a dense and difficult curriculum, and overcrowded classrooms. Private lessons are also frequently forced on students through teachers threatening to jeopardize pupils' promotion to higher grades.

Since the 1980s, Egyptian teachers have seen their income being eroded by rising inflation, making it difficult for them to satisfy their basic needs with only the income received from public schools. Teachers have found after-school classes to be an easy and lucrative way to supplement their income, and therefore encourage students to participate by sometimes even relying on drastic means. This paper focuses on a specific form of private tutoring (PT), which is different from the more common concept. Common private tutoring is based on the student's (or his parents') motivation to improve his knowledge about the subject (mostly for competitive reasons), but is not required for a bright student in order to pass his class reasonably well. For the purpose of this study, PT implies that parents are forced to send their children to private after-school classes because teachers either: (1) directly employ means of punishment to force students to participate or (2) use the deficiencies of the educational system to their advantage by deliberately reducing teaching quality and commitment (i.e., effort in class), drawing on the dense curriculum and overcrowded classrooms.

The Egyptian system of PT has passed on the responsibility for education from state to parents, thus putting additional financial strain on parents who send their children to a public school. It has put at a disadvantage the already underprivileged poor. A 1994 survey of 4,729 households revealed that 64 percent of Egypt's primary school children in urban areas and 52 percent in the rural areas had received private tutoring (Hallak and Poisson 2007). According to another study of 1997 (see also, Hallak and Poisson 2007), household expenditures on tutoring at the preparatory, primary and secondary levels accounted for

1.6 percent of Egypt's GDP. PT has further severely deteriorated public education because of teachers' refraining from actively teaching in school. Instead, teachers focus their work effort during their hours of private tutoring. Refusal to work along with favoritism toward students receiving PT has created a system of corruption amongst public schools in which it is not the student with the best abilities who receives best grades, but rather the student whose parents are willing to pay extra money to their child's teachers.

Since the need for private tutoring has benefited a number of interested parties, few incentives exist to change the status quo. Excessive private tutoring has turned into a self-enforcing mechanism and improvement of the educational system will not occur without fundamental reforms. Breaking the cycle between low educational quality and excessive private tutoring can only occur through substantial structural reforms enforced by the government and through policies that change the incentive structure of interested parties to render these reforms sustainable. Improving the quality of primary education accompanies solving the causes for excessive private tutoring.

In this context, this paper aims to shed light on PT by determining its fundamental drivers. Based on statistical data and an analytical study, the paper determines those variables that influence PT and teachers' shirking behavior during classes. The paper then elaborates on approaches that may help to minimise incentives for PT and augment teachers' willingness to perform well in class. It devises policies that help reducing corruption (and the black market) in the education sector and the financial strain on parents that are exposed to PT, as well as improving education quality.

The paper begins in Section 2 by illustrating the Egyptian case through highlighting the data gathered by the Egyptian Center for Economic Studies and the Central Agency for Public Mobilization and Statistics. Section 3 elaborates an analytical model on the basis of our empirical data. This model then serves as the basis of our analysis, which will define the important variables and their effect on effort levels in Section 4. Section 5 uses the results obtained and devises a number of mechanisms that can help reduce PT and improve effort levels. The last section concludes.

## **2. Background**

Though education in developing countries has been studied in depth (Banerjee and Duflo 2011; Duflo et al. 2010; Iversen 2007; Biswal 1993, 1999; Bray 1999), the educational system of Egypt has not been the focus of research studies, apart from rare exceptions (e.g., Richard 1992; Hartmann 2008; Loveluck 2012; and Sobhy 2012). Recent data is unavailable. The Egyptian Center for Economic Studies, jointly with the Central Agency for Public Mobilization and Statistics (CAPMAS), conducted two surveys in order to gather cross-sectional data on 1504 Egyptian families and a similar number of teachers. Egyptian families have responded to a questionnaire on their experiences in public schools, and teachers have been asked questions regarding their teaching experience, income, and incentives.

Though the data show little direct enforcement (Table 13) of private tutoring, there are clear indications for an indirect enforcement. The dissatisfaction of parents with the educational system (Table 16) mainly results from teachers who in their view lack commit-

ment and depend heavily on private lessons, in addition to crowded classrooms (Table 17). The same data shows that the current curriculum in public schools further promotes the deficiencies of the educational system. Teachers exploit systemic deficiencies and reinforce them by inadequate commitment.<sup>1</sup> Instead of being sanctioned for this practice, teachers face an educational system that indeed actively supports PT. The main reason for parents to send their children to private classes is not the risk of expulsion from class, but crowded classrooms with a median of 50 pupils, a dense and difficult curriculum, and most of all the desire to excel (Tables 15, 21, and 22). In addition, parents are often unable to help their children after class (see Table 20), and are dependent on external private lessons.

Indeed, half of the parents state that their reason to pay for after-school tuition is to guarantee the excellence of their children. Yet the desire to excel should not be understood as the parents' wish that their child becomes top of the class. Excel implies the desire that their child is able to successfully overcome the structural impediments of the educational system (Table 22) and is able to pass school. Parents thereby indirectly support this practice of PT, and illustrate a self-enforcing "distrust" in the educational system's efficiency. Excel translates into a loss of belief in the ability of public schools to provide an adequate education that enables students to successfully pass exams. Parents are pressured both by peer effects and by the structural failure of the educational system to send their children to private classes after school; and teachers exploit this effect. During regular classes, teachers use the overcrowded classrooms and the dense curriculum as a pretext to convey very little information to students. In addition, the structure of the curriculum causes evaluation not to be based on the good grasp of the subject but on mere memorization. This motivates and allows teachers to create strong incentives for private tutoring. Exercises and model answers, as well as revisions are exclusive to students in private classes. During private tutoring teachers prepare summaries of what should be memorized for exams and point out special tricks for writing a specific exam. Except for the 3<sup>rd</sup>, 6<sup>th</sup>, 9<sup>th</sup> and 12<sup>th</sup> grades, teachers are in control of exams and promotions of students.<sup>2</sup>

Yet, parents do little to mitigate the systemic inefficiencies and appear to have succumbed to the necessity to pay for private tutoring. Parents manifest very low participation rates in parents' council meetings (91.8 percent do not participate) and also a low interest to discuss topics like school fees (3.0 percent), teachers' performance (4.7 percent) or curricula and teaching methods (2.8 percent). As both a consequence and a cause, roughly a third of the parents considers the effectiveness of the parents' council to be weak (Table 18). Parents regard sending their children to private schools as the only solution to the issue. A vast majority of the parents (92.5 percent) would prefer to send their children to a private school if it were accessible at the same cost as a public school, but distance and above all credit constraints render private schools inaccessible (Tables 10 and 12).

In addition, PT is not exclusive to public schools. This phenomenon is also common in private religious schools and language schools, though to a lesser extent. Since in private language schools subjects are taught in foreign languages, rates for private tutoring are doubled. This indicates another reason why parents do not shift from public schools to private schools. Furthermore, parents are credit constrained, and thus prefer to pay small amounts distributed over a longer period. Parents also have a strong time preference for current payoffs (thus heavily discount) and exhibit ignorance for small money amounts.

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<sup>1</sup>We further observed that the pupils' dedication is not a reason for poor performance, see table 11.

<sup>2</sup>During these years, exams are elaborated, collected and directly graded at the Ministry of Education.

Most parents are thus simply unaware of how much money is spent on PT over the year (according to our data, 77.37 percent of the parents asked did not calculate their expenses). In addition, the lack of demand for highly skilled workers and employees challenges the benefits from paying for a good education. Contrary to the common maxim, higher education does not improve chances of employment, on the contrary, the inverse trend can be observed in Egypt (Figure 11). In addition, a patriarchal perspective of parents on educating their children additionally lowers the incentive of parents to provide their daughters with a good education. Yet, sending a child to a public school and in addition to a private teacher puts financial strain on the family that can reach levels equal to sending a child to a private school (Tables 4 and 5). Even more extreme cases exist, in which students take PT after class in order to avoid being failed, and additional private lessons with another teacher in order to understand the subjects taught.

Teachers, on the other hand, may generate considerable amounts from private tutoring (Table 6). Though teachers in Egyptian public schools are civil servants and as such cannot be terminated (thus providing teachers with the security of a position for life), this supplementary income is important as teachers' wages have barely increased since the 1980s. Regular salaries have stagnated at EGP 500 per month over the past years and have even seen drastic slumps in several years (as illustrated in Figure 9). Based on the average growth rates of real wages in the educational sector from 2000 until 2008, Egypt ranks 70 out of the 79 countries for which World Bank data is available (with an average of -3.38 percent compared to an average of 5.39 percent over all available countries).

Low wages and compromised reputation on the one hand, but a safe position as a civil servant on the other, has both allowed and urged teachers to exploit their status in order to augment their income through private tutoring. Frequently teachers continue educating the same pupils during their private lessons they have in class (Table 15), and are able to exercise additional pressure by teaching in their proper homes instead of private lesson centers (Table 14). The strategy to disclose information to students prior to the exam, thereby disadvantaging those students not receiving PT, is not unique to Egypt, but has been observed in Azerbaijan, Cambodia, Greece, Kenya, Lithuania, Mauritius, Romania, Sub-Saharan Africa, Turkey, the United Arab Emirates, and Vietnam. It also occurs in North and South America, as well as Europe. Similar to Egypt, this practice has oftentimes been the result of comparatively low income levels of teachers in these states.

Since low wages have been identified as a cause for PT, the Egyptian government has decided to increase teachers' wages to adequate levels to induce them to abandon PT. One possibility for estimating an "adequate" salary for a specific profession is to compare the ratio of the wage of this profession to the median income for different countries. Due to a lack of data, I calculated the ratio of wages in the educational sector to the GDP per capita instead. Based on calculations from the World Bank data, Egypt ranks 44 out of 68 (with an average of 0.95 compared to an average of 1.40 in all available countries), with a falling tendency (see Figure 10). Clearly, relative wages of teachers do not match those of their colleagues in the majority of other countries. According to a recent decree, the minimum wage has been increased to EGP 1,388 for assistant teachers and up to EGP 3,938 for master teachers. Tripling or even octuplicating the wage should put it at adequate levels, yet our data and analytical model suggest that this will have only little influence on the practice of PT. Income levels of teachers are uncorrelated with their satisfaction, and only

weakly correlated with their belief if this wage can be considered as adequate (Tables 7 and 8).

In order to test the assumption that a wage increase will not affect PT and also to validate one of the central results of the analytical model, I ran a logit regression on the likelihood of giving private lessons. Neither income, nor job satisfaction play a role in the teachers' decision to provide private lessons (Table 1). We also observe that teachers state amounts which they believe to be adequate wages that far exceeded their nominal wage, as well as the new wages implemented by the government. The demand for higher "adequate" wages is used as an ex post justification for using PT.<sup>3</sup> The regression's results clearly show that increasing the wage does not prevent teachers from employing PT, as the adequate wage and the actual nominal wage are insignificant (the latter at 1 percent) for the decision to offer private tutoring.

Similarly, Aslam (2011) illustrated that in the case of Pakistan, wages have increased over-proportionally to other professions leaving teachers with a relatively high salary, but PT is still widely used. The problem lies in the general acceptance of PT. Parents understand the financial constraints of public school teachers and rationalize PT on these ground. Even teachers and pedagogy students (Kubánová (2006) shows a similar behavior for Slovakia) do not perceive PT as an unethical act.

Some countries, such as the Republic of Korea, Bosnia and Herzegovina, Croatia and Poland, (as well as Mauritius and Hong Kong for higher grades) formally forbade or discouraged private tutoring, yet without much success, since tutoring takes place on an informal level. Kenya declared after classes to one's own students illegal. However, such a policy would only make teachers to mutually refer their students to each other. In addition, maintaining a low wage level but illegalizing tutoring for teachers will encourage teachers to abandon their job and become full-time tutors in the shadow sector. It also puts additional pressure on the supply of qualified teachers and leads to an increase of the shadow education sector, as has been seen in several regions around the world during the last two decades.

For a better understanding of the main drivers of PT, an analytical model will study teachers' behavior on the basis of what has been highlighted in this section and will form a basis for discussing adequate policies.

### **3. The Model**

The following model differs from standard principal-agents models in two ways: Given the previous explanations, the effort level of a teacher in a public school can be clearly specified in the contract since teaching performance can be at least imperfectly measured by asking students and doing spot checks in classrooms. Thus, in contrast to a typical organizational setting, shirking is not a result of information asymmetry between principal and agent, which would generally be due to the impossibility to retrace individual effort levels from group performance (a group might be constituted by high and low performers) and the heterogeneity and stochasticity of the work process (a clerical assistant will work on dossiers that can vary largely with respect to scope and complexity). In contrast, if a

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<sup>3</sup>I only receive this, but I feel that I should be paid much higher, so it is only "fair" to exploit my students. See also Table 9.

child is asked by his parents, what he has learnt today in school, the child should be able to give a statement on which basis the performance and effort of a teacher can be evaluated. Admittedly, the signal is only imperfect and distorted by the immense class size, and the difficulties of the curriculum.

The motivation to shirk is a product of the position of a teacher as a public employee. A potential termination of his contract is only an empty threat and not part of his decision making process. Hence, the given problem is not one of the standard principal-agent literature, in which an effort level can be imposed by proper means of supervision. Instead, other means of extrinsic motivation are required.

### 3.1. Definitions and Best Responses

Effort implies a disutility on the side of the teacher, who wishes to set its level as low as possible in order to maximize his utility. Given the former explanations, in addition to the wage, a number of variables exist that play an elementary role for understanding the decisions made by a teacher in a public school. Teachers consider their wage too low and thus appropriate to find other means of income, namely, PT. As a consequence, a wage too far below the wage level of what is considered adequate leads to a reduction in effort levels. In addition, the lower the effort level of a teacher in class, the higher the pressure will be on students to join his private tutoring classes and the higher will be the wage from private tutoring. The previous section has shown that PT is promoted by the educational system, and accepted by parents and pupils. If, however, the educational system, or those peers involved, sanction PT and exercise high social pressure on abusive teachers, who impose PT through low effort levels, teachers will eventually back down and offer a higher effort level. Another complaint of teachers is the low status and reputation of their position. A high reputation of a teacher, which is closely linked to his performance, will lead to higher effort levels. For the effect of social variables and link to private tutoring, see Tables 2 and 3 on which the assumptions of the model are based.

We use the following definitions

- perceived benefit from working as teacher in a public school  $\bar{w}$
- wage  $w$
- adequate wage  $w^f$
- effort  $e$
- the return from private tutoring  $\bar{w}^t$
- disutility from social pressure  $p$
- utility from status / reputation as a teacher

We can thus define a standard utility function

$$U_i^{pt} = \bar{w}(w, w^f, e) + \bar{w}^t(e) - p(e) + s(e) \quad (1)$$

with first and second derivatives following the questionnaires' results. The first order condition of equation 1 determines the optimal effort level. Note that  $\bar{w}$  and  $\bar{w}^t$  are functions,

not parameters.<sup>4</sup>

$$\bar{w}' + \bar{w}^{t'} = (-1)(s' - p') \quad (2)$$

The left-hand side defines the marginal cost of increasing the effort level, namely the perceived inadequate wage for a high effort level and the potential forgone revenues from PT. The right-hand side defines the marginal benefits from increasing the effort level, namely higher status and lower social punishment. Thus a teacher equates the marginal cost of effort to the marginal benefit of effort. It is not assumed that a teacher calculates the first order condition and sets his effort level accordingly, but that each teacher now and then varies his effort level, imitates other teachers that achieve a higher payoff and thereby converges to the optimum level of effort over time. The teacher thus only acts as if he were indeed rationally maximizing his utility.

An example will make this clear. Assume that the utility of a teacher who enforces private tutoring is:

$$U_i^{pt} = \underbrace{w - \alpha_i(w_i^f - w + c)e^2}_{\bar{w}(w, w^f, e)} + \underbrace{(1 - e)w_i^t}_{\bar{w}^t(e)} - \underbrace{\rho_i x w_i^t (e^* - e)}_{p(e)} + \underbrace{\sigma_i e}_{s(e)} \quad (3)$$

with definitions as before, and

- the discomfort from being paid too little  $\alpha_i$
- the cost of effort  $c$
- the impact or strength of social pressure  $\rho$
- the share of teachers that do not rely on PT  $x \in (0, 1)$   
(we will determine  $x$  later)
- the impact of social status on the teacher's wellbeing  $\sigma$
- being the effort level as expected by society  $e^* \in (e, 1)$ .

All variables except for  $x$  and  $e$  are parameters. Equation 3 states that the negative effect of a discrepancy between an adequate wage and the real wage increases the more effort a teacher exerts (first subtrahend). It further shows that lower than normative effort levels increase social pressure (second subtrahend), but allow for a stronger abuse of his position to generate a higher income from PT (second summand). The teacher thus faces a dilemma. A decrease in effort will generate a larger revenue from PT and a lower disutility from teaching in a public school. At the same time, it imposes stronger social pressure on him and incurs a loss of reputation.

Since individual differences are of no importance for the decision making process, subscripts are dropped for notational clarity. Setting in the optimal effort level from the

<sup>4</sup>We further notice that in Table 22 reputation and private tutoring are positively related, which seems contradictory to the model, since it assumes effort levels in class as the only argument. The previous section illustrated that parents see private tutoring as a necessity and as immanent to the educational system. Accordingly, a teacher who provides a good performance during his private classes and is able to blame congested classrooms and curriculum for the bad performance during regular class hours, is respected by the family. The underlying assumption of the model is that parents do not see private tutoring as a necessity and will look at the actual performance of a teacher in class—eventually understanding the link between in-class performance and the requirement for after-school classes (see also Section 5). For simplicity, I did not make a difference between in and after-class effort, and assumed the same link of status to a teacher's effort for both types.

first order condition into equation 3 gives the expected utility level of a teacher with PT.

$$U_i^{fpt*} = w + w^t + \frac{(\sigma - w^t(1 - \rho x))^2}{4\alpha(c + w^f - w)} - e^* \rho w^t x \quad (4)$$

A teacher might choose not to rely on PT. He thereby forgoes the additional income but is not exposed to social pressure. His utility function, in this case, is given by

$$U_i^{npt} = w - \alpha(w^f - w + c)e^2 + \sigma e \quad (5)$$

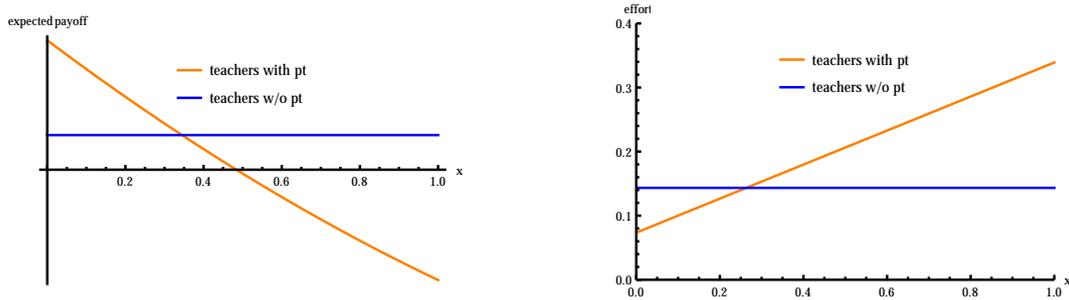
Choosing an optimal effort level leads to a utility of

$$U_i^{npt*} = w + \frac{\sigma^2}{4\alpha(c + w^f - w)} \quad (6)$$

### 3.2. The Dynamic Perspective

This shows that teachers without PT are unaffected by the current norm. Those teachers relying on PT base their private effort levels on how frequently tutoring occurs among teachers and eventually exceed the effort levels of teachers who do not rely on PT. Figure 1

Figure 1. Utility of tutors giving PT vs. teachers who do not rely on additional income, given the share of the latter, and the corresponding effort levels



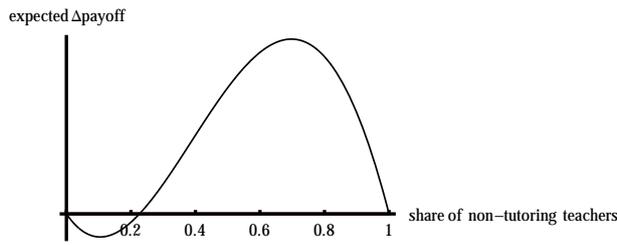
plots the expected utility of both types of teachers with respect to the prevailing norm, i.e., the share of teachers not giving PT, and their effort levels.

It is, however, important to study the dynamics of the system. Under the assumption that teachers regularly consider changing their effort level and also after talking to other teachers, the dynamics of the system are roughly described by

$$\dot{x} = x(1 - x)(U_i^{npt*} - U_i^{fpt*}) \quad (7)$$

Thus the system is in equilibrium whenever one type of teacher is completely absent or when both strategies offer an identical utility. Figure 2 plots equation 7 for the given example. We can see that the system has three equilibria; one in which PT is completely absent, another in which all teachers rely on PT, and an interior equilibrium at roughly 25 percent of non-tutoring teachers. This interior equilibrium is, however, unstable since it is best to do the same as all other teachers (we see also that the first derivative at the interior equilibrium is positive). Thus, even in the presence of strong social pressure and a high impact of status, PT can be maintained as an overall social norm. In our example, it is necessary that about one quarter of the teachers decide to abandon PT after which

Figure 2. The system dynamics: Whenever the graph is positive, the share of non-tutoring teachers increases, whenever the graph is negative, the share decreases

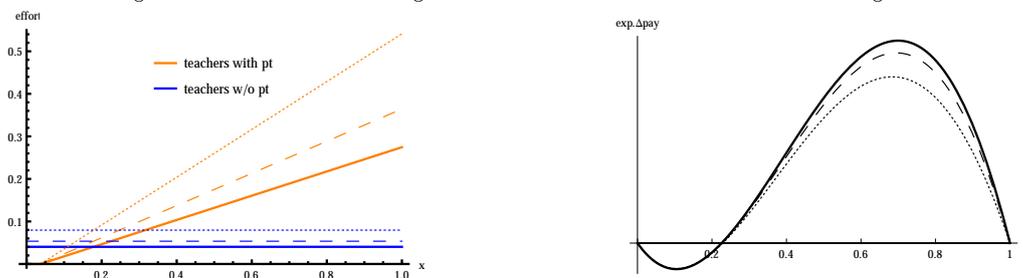


dynamics will impose a new norm completely free of PT. The interior equilibrium defines the minimum share of teachers necessary to adhere to the no PT norm in order for a normative shift to occur. This is a very important first and crucial result. Since the pure equilibria (the all PT norm and no PT norm) are stable and attractors, once a population has reached these states no more reinforcement is necessary. Applied to our case, this implies that once a sufficient number of teachers object to PT no further intervention is necessary. If this critical number is, however, not reached, PT will stabilize again as a prevalent norm without further additional external intervention. It is hence important to understand which measures (variables) move the interior equilibria, i.e., the critical number of teachers necessary to induce a shift in the norm, and lead to a more likely elimination of PT. In addition, it is of interest to study the effect of the model's variables on teachers' effort levels. Both will be analyzed in the following section.

#### 4. Analysis, Comparative Statics, and Extensions

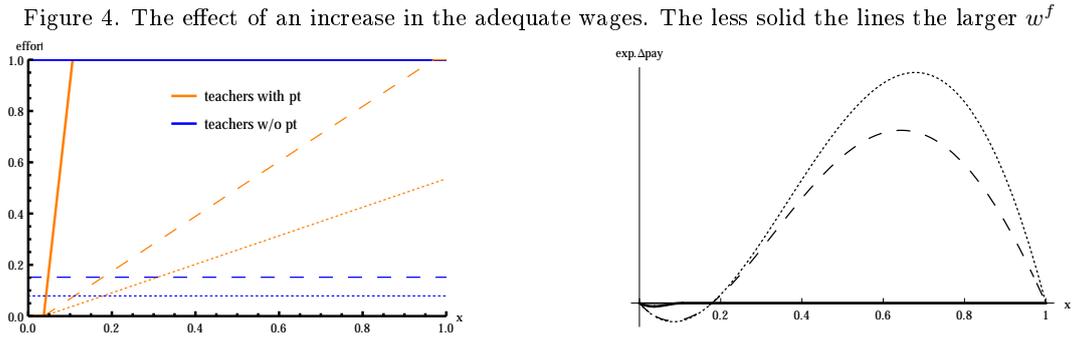
Two variables are important for studying the behavior of teachers in our model, namely the effect of the parameters on the optimal effort of teachers with respect to both types, and the effect of changes in these parameters on the equilibria (i.e., the long-term outcomes). Figure 2 illustrates the existence of two pure stable and an interior unstable equilibrium. Since PT is commonplace, the point of origin is the left stable equilibrium in the graph and persists on the long term in the absence of any further intervention. The position of the interior equilibrium then defines the likelihood of a transition from all tutoring to nobody tutoring. Since equilibria are defined at the nulls of equation 7, the interior equilibrium is defined by those points at which  $U_i^{npt*} = U_i^{fpt*}$ . Looking at the effect of wage  $w$  on the

Figure 3. The effect of a wage increase. The less solid the lines the larger  $w$

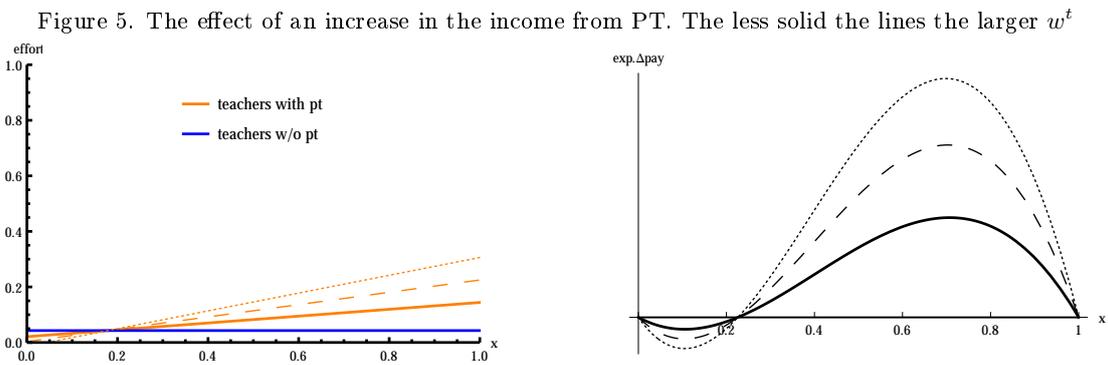


optimal effort and the position of the interior equilibrium reveals that social pressure and status are important for an increase in  $w$  to have an effect. If  $\rho = \sigma = 0$  in equations 3 and 5, all teachers choose an effort level equal to zero. We will thus generally assume strong social pressure and status effects in our analysis. Figure 3 illustrates the dynamics and

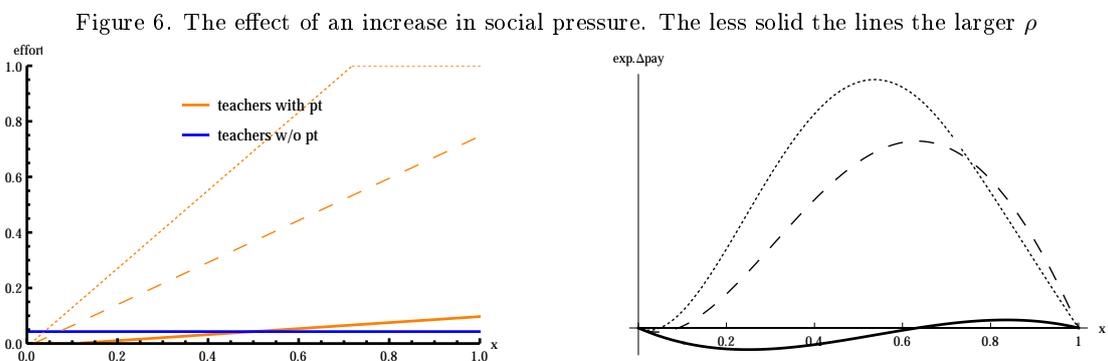
behavior in this case, indicating the positive correlation between wage and effort levels in



the presence of social pressure and status effects. We see that the interior equilibrium, however, remains untouched by changes in  $w$ . The correlation is inverted if the impact of too low wages  $\alpha$ , the cost of effort  $c$ , or the adequate wage  $w^f$  increases. Figure 4 shows the system's behavior for an increase in the adequate wage. At a wage  $w$  close to the adequate wage  $w^f$ , all teachers do not shirk and provide a maximum effort level. As the difference between the real and the adequate wage increases, the effort decreases.



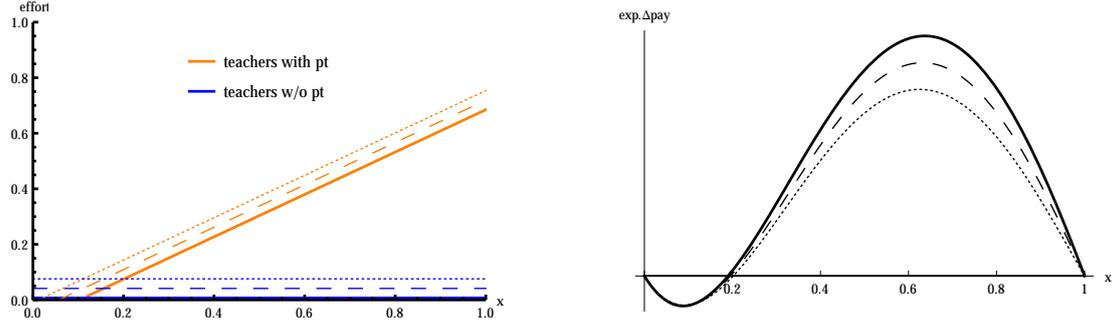
The better the outside option of generating income from private tutoring the lower the effort level of teachers in class. This is demonstrated by Figure 5. Larger social pressure  $\rho$  increases the optimal effort of privately tutoring teachers and affects also the position of the interior equilibrium (and thus the likelihood of the two stable equilibria). This is illustrated in Figure 6 which shows an increase in effort levels of these teachers and the increase in likelihood of teachers to renounce PT. A larger status effect positively affects



optimal effort of both types of teachers in the same way (see Figure 7).

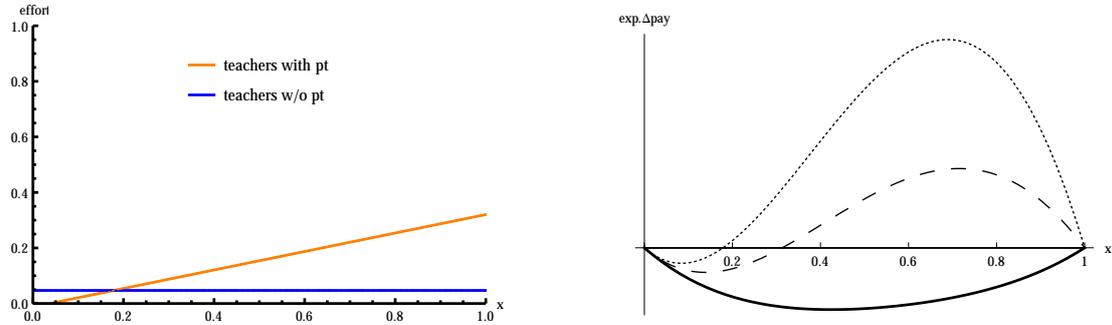
The effort level  $e^*$  which is expected from teachers by parents and students only

Figure 7. The effect of an increase in social status and reputation. The less solid the lines the larger  $\sigma$



affects the position of the interior equilibrium, as shown in Figure 8. It can be seen that the expected effort level significantly affects the likelihood of the stable equilibria. If neither students nor parents expect any significant effort of the teacher, all teachers resort to PT. Yet, in the case in which high effort is a normative behavior and expected by parents and students, it is likely that teachers will abandon PT.

Figure 8. The effect of an increase in socially expected effort levels. The less solid the lines the larger  $e^*$



It is, however, interesting to study the impact of policy changes on the effort level of teachers that rely on PT. A drawback of the former analysis is that it refers to the specific example as defined by equations 3 and 5. However, a number of results can be derived on the basis of the general model, as defined by equation 1.

- Ability of parents and pupils to enforce commitment of teachers increases effort. If a mechanism exists that allows them to punish teachers with low effort levels more efficiently, it can be proven that this mechanism will increase the optimal effort of teachers.
- The authority and market power of teachers decreases effort. As long as they are able to encourage a large number of pupils to pay them for private tutoring, a teacher will exhibit a low commitment in class.
- Information on a teacher's commitment increases effort. Teachers can blame inadequate performance in class on the number of students and parents receive information only second-hand. If a mechanism is introduced that allows to better supervise teachers and to publicize their performance, teachers would have an incentive to perform better.

## 5. Effecting the Principal Variables

Section 4 illustrated the effect of the models principal variables. Before illustrating in which way these variables can be influenced, it is necessary to again summarize the current results. The model contains 5 important variables (their effect on teaching effort levels during classes is indicated by the first sign, and on the likelihood of abandoning PT by the second sign in brackets) :

1. the income of teachers in public schools with respect to what is expected to be an adequate wage (0/+,0),
2. the income of teachers from PT (-,0),
3. the normative effort level, i.e., what parents and students expect of teachers in public schools (0,+)
4. the degree of sanctioning PT (the non-acceptance by the educational system), social pressure exercised on teachers by peers (+,+)
5. the social status that a position as a good teacher offers in society (+,0)

In addition, we obtained general results about the correlation of effort and the following conditions:

1. facility to exert social pressure on teachers (+)
2. increase status effects on teachers aligned it with their effort levels in school (+)
3. ability to enforce PT on students and the market power of teachers (-)
4. better identification of teachers' real effort levels (+)

The model has revealed two variables as being important for determining the transition probability: normative effort and social pressure. It also demonstrated that increasing the wage levels of public school teachers will have a very limited effect on their behavior. Since both teachers using PT and those who do not, receive an identical increase of income, the former teachers will not forgo their additional income, given that the revenues from private tutoring remain a multiple of their regular income. As a consequence, effort levels will remain very low in the absence of additional social effect. The interplay between a wage closer to adequate wage as a financial incentive on the one hand, and social incentives on the other can lead to higher effort levels and less shirking by teachers in public schools. These social incentives are status effects, social pressure, normative expectations, as well as control by parents and students (including the ability to denounce and avoid PT) and better traceability of a teacher's work.

Opening the teaching market by creating a larger supply of teachers can help reduce the income from private tutoring and, hence, the incentive for low effort levels in class. This is not only a consequence of stronger competition between teachers (i.e., decrease in market power), but also of the decrease in class size (i.e., better identification of a teacher's effort).<sup>5</sup> Thus, stronger competition has both an effect on the expected income from private tutoring and also on the ability to supervise a teacher's effort. Only under the condition of smaller class sizes is it possible to trace high demand for private tutoring

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<sup>5</sup>Under the assumption that schools can accommodate the new teachers in additional class-rooms.

back to a low performance of teachers in class.<sup>6</sup> In order for this to work, the monopoly power of teachers in public schools has to be drastically reduced. It is based on two factors; a lack of substitute teachers who are sufficiently well-educated to train young students in public schools, and the exclusive control of examination by teachers in younger school years. As long as the elaboration of exams is either not completely separated from teachers or remains uncontrolled by third parties, a strong incentive exists to convey some of the questions to those students receiving private tutoring classes prior to the exam. In addition, teachers control which students are / are not promoted to higher grades at the end of the academic year, and absence from private tutoring might severely impede chances.

Thus, in order to reduce market power of teachers and to ease the demand for larger supply, youth requiring first experience in education can be sent to school as semi-volunteer teachers (as highlighted in Banerjee and Duflo (2011, p. 82) in the case of India and Ghana). They can offer additional classes to children that are most exposed to high absence rate of teachers, large class sizes and thus to strong pressure to take private tutoring classes. For this to be feasible, it is necessary that these young teachers are protected against social pressure and shunning exercised by incumbent teachers. Strict guidelines for the administration and school have to ensure that these supply teachers are treated equally to permanent teachers.

Given a proper remuneration, a freer market can lead to canceling out the abuse of private tutoring by establishing additional private schools in rural areas, which offer schooling at competitive rates. If parents have to pay on average an additional amount of EGP 2300 (including remedial lessons, see Tables 4 and 5) for PT to teachers from public schools, parents are inclined to send their children instead to a private school at a similar amount in which PT is uncommon (92.5 percent of the respondents). This solution would require, however, that administrative hurdles for establishing new private schools are eased and the accreditation procedure is accelerated and simplified, and thus necessitates again a change at the systemic level.

As mentioned above, it has to be ensured that students receiving private tutoring classes by teachers, who also teach them in school, do not obtain an illegitimate advantage over students that do not receive the additional private classes. It is therefore imperative that those teachers are unable to reveal information on exams prior to their taking place. Consequently, a higher institution, which is independent of the public teachers, should elaborate exams that are based on the current syllabus and are sent in a sealed envelope to the schools only shortly before the exam date. Examination (i.e., how points are distributed) should be rendered transparent for students and their parents.

Pressure on teachers who abuse their position can only be introduced and strengthened if awareness of the benefits of good education is raised. This requires policies that affect both the demand and the supply side of education. If firms in Egypt demonstrate a strong interest in well-educated students and offer these students attractive career and payment opportunities, the negative correlation between educational level and employment rates in Egypt will be reversed. The increased demand for good education will encourage parents

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<sup>6</sup>In classes of size 50 and above, a teacher can claim that it is impossible to take adequate care of all his pupils. This is not to say that private classes will be entirely eliminated at smaller class sizes, since a student's ability to cope with the syllabus plays a role. But clearly the number of students requiring additional hours will be reduced, and overall performance of a class lies more in the hand of a teacher.

to invest more in education and to pressure teachers to provide a high quality of teaching during their classes (i.e., leading to an increase in the normative effort level). "Make it attractive to invest in business requiring educated labor and there will be a need for educated labor force [...] since parents will start to really care about education, they will also put pressure on teachers to deliver what they need." (Banerjee and Duflo 2011, p. 77).

On the supply side, stakeholders need to be made aware that proper education, especially of girls, does not only have a positive effect on employment but can also have a positive effect on child mortality and fertility. Thus, even without a high qualified job, good education can improve living conditions and exhibit positive influence at a social level, which again can have a positive effect on the demand side. Firms, on the other hand, are more inclined to invest in a certain social environment with a well-qualified labor force. Thus, the positive and reinforcing feedback of schooling exists both on the demand and supply side. In making these facts known, peers are more inclined to put social pressure on teachers to minimize absence rates and to offer a good teaching quality in school. These are most importantly students and their parents. It is thus vital that both parents and students understand the importance of proper schooling, as well as their right to receive such schooling in a public school without the additional requirement to pay additional fees disguised as PT. In addition, they should be made aware of the advantages of good education for their own family.

Yet, the willingness to enforce a better education and less shirking by teachers is only a first step. It further requires that the actual efforts of teachers can be retraced and that parents have the power to exert pressure on teachers. Students are best-positioned to observe a teacher's performance. Yet, not all students will communicate a high absence ratio, low quality teaching or issues regarding their teacher to parents. In a regular teacher conference, parents can bring up issues, which have been conveyed to them by their children, and thereby inform other parents of their existence. In order for parents to have a specific contact person, a class teacher should be assigned as the responsible person for this class to act as a mediator between teachers and parents. This class teacher has the duty to inform parents about new regulation, their rights and also problems. Parents, on the other hand, should assign a representative acting as their spokesperson. This representative can be called by the other parents and directly contact teachers in case of a problem. In addition, a parent's association consisting of a small number of parent representatives should be given a direct say in the administrative process of the school. In this way, parents are not only encouraged to bring problems forward but also realize that their opinion matters, and that a regular participation in a parents' council is in their and their children's interest.

Similarly, public officials should understand that good education along with a demand for high skilled workers is the basis for economic development. Education creates positive network externalities, which increase the gains of good education. Good engineering skills, for example, are more productive in a group of other skilled engineers. Researchers form hubs in centers and universities, because their joint knowledge and creativity are more than the sum of their individual knowledges and creativity. Good education also creates direct externalities. A good mechanic better ensures the proper functioning of a car, a well-educated physician can diagnose illness better and decrease mortality. Individuals, however, neglect the positive externalities of education, and thus good education remains

underprovided (or underexploited), and requires state intervention that renders education more attractive.

A regular evaluation of teachers is a helpful tool to exercise pressure on teachers to provide proper teaching quality during their hours in class. In Europe and Northern America, several social networks exist, which allow students to evaluate the performance of their teachers. Such a solution has two advantages: (1) a decentralized Internet platform is not exposed to potential manipulation, and (2) the access to information on this network is universal. We have seen that PT is a systemic problem in which the administration of the school takes an interest (such as the headmaster). If evaluation only took place at the school level, those who have an interest in manipulating the data, have direct access to it. This will not be the case for an Internet platform under the government's control. In addition, schools in which PT is common would be exposed to a large public. Such a tool can represent a strong incentive to teachers, but requires regular access to Internet by parents and students. According to our data, roughly half of the families possess a computer, but Internet access is limited for most families (Table 19). Under these conditions, public schools should offer access to the platform but exclude any possibility of manipulation by teachers or members of the school. In addition, the Internet platform, on which students can evaluate their teachers could also have a direct effect on how a teacher is perceived by his environment. In order to strengthen the reputation effect, outstanding teachers can be awarded prizes and public recognition on the basis of their evaluation. A number of school administration software applications exist, which allow for the supervision of students and teachers by parents and the school administration. These applications should offer a basis for a country-wide platform that is publicly accessible by any stakeholder.

Furthermore, incentives can be created that induce teachers and the school administration to mutually control compliance to a standard of education via peer-monitoring. Instead of setting a fixed and stable budget for each public school, parents should be allowed to determine the amount of money that they are willing to contribute to their school. Parents are willing to pay more to schools which receive a high evaluation by their students on the Internet platform. The headmaster of a school and its teachers will thus exercise peer pressure on those teachers that decrease the school's evaluation levels. However, credit constrained parents are unable to pay schools out of their own pockets. Such an approach would contradict the idea of public schools and clearly disadvantage low-income families, who are unable to finance the education of their children. Under a decentralized free-market solution, the quality of education and income are closely related. Consequently, this solution would magnify the poverty trap for the poorest and would aggravate one of the main social issues of Egypt. In order to circumvent these issues and to ensure that funds reach schools in the way intended by students and the government, vouchers can be issued by the government to each family. These vouchers can only be used to pay for the schooling of their child, but not to buy other commodities. By giving these vouchers to parents and allowing them some freedom of choice regarding the public school to which they would send their child, parents create a financial incentive to offer a better quality of education to pupils. A similar approach has been proven to be successful in Chile, Hong Kong, Sweden, and the US.

## 6. Conclusion

This paper addressed the phenomenon of private tutoring in Egyptian public schools, which has severely impeded the quality of the educational system in Egypt. It allowed for an informal market and corrupt system that does not grade students based on their performance but rather on their parents' willingness to pay. It has taken the responsibility to provide good public education away from the state and placed it on parents, thus concealing the insufficient remuneration of public school teachers, and imposing a burden on those most dependent on state support.

After studying and illustrating the current situation in Egypt based on empirical data made available to the Egyptian Center for Economic Studies, a number of important factors have been identified and analyzed on the basis of a simple game theoretic model. Based on this analysis, the paper has elaborated a number of recommendations that can help induce teachers to refrain from PT and shirking, and to encourage high levels of effort and teaching quality. It has been illustrated that only raising income will be inadequate, yet it is an important aspect for increasing teachers' effort levels. For an increase in remuneration to change the attitude of teachers, it is necessary to simultaneously implement other components that induce higher performance and decrease the revenues from PT. These have to focus on the monopoly power of teachers, the high teachers-to-pupils ratio, the low awareness and power of parents and students, informational deficiencies, a lack of peer pressure, as well as a demand and supply side problem.

The foundation of PT lies in the fact that teachers can almost unilaterally determine the success of a student without possible intervention of parents and other peers. It is thus important to strengthen the voice of parents and to render grading more transparent, as well as to make sure that teachers cannot convey information about exams to students during private tutoring classes. In addition, it is necessary to make parents conscious about the benefits of good education and to provide them and the students with proper representation in the school management. By informing parents about their rights and by giving them the opportunity to voice problems and enforce their resolution, representatives can exert pressure on the school and its teachers and thus enforce higher effort of teachers. This mechanism can further be used to improve supervision and visibility of a teacher's performance by allowing direct communication between teachers, students, and parents. In addition, providing students with a platform on which they can evaluate teachers regularly and publicize these evaluations puts both shirking and well-performing teachers in focus and increases the visibility of information. This could be combined with schooling vouchers, which would allow parents to exert financial pressure on schools, thereby indirectly enforcing peer motivation. This effect can be strengthened by regularly and publicly honoring teachers that exhibit a good performance during classes and are ranked high on the platform.

These solutions can, however, only do little to improve the current problem of low quality of education as long as three issues remain unsolved: congested classrooms, little demand for education in the labor market, and an inefficient curriculum. The first problem can only be solved by increasing the supply of teachers. An efficient way would be to ask students to provide volunteer or semi-volunteer work. In this way, salaries for additional teachers can be kept lower, but will still require an increase in expenditures devoted to edu-

cation in Egypt. The second problem can be addressed by rendering Egypt more attractive for investors demanding high-skilled labor. The third problem requires a thorough analysis and is beyond the scope of this paper and thus is left to future research.

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**A. Appendix: Tables of ECES Data from Parents' and Teachers' Questionnaires**

Figure 9. Growth rates of real wages - values calculated from available World Bank Data

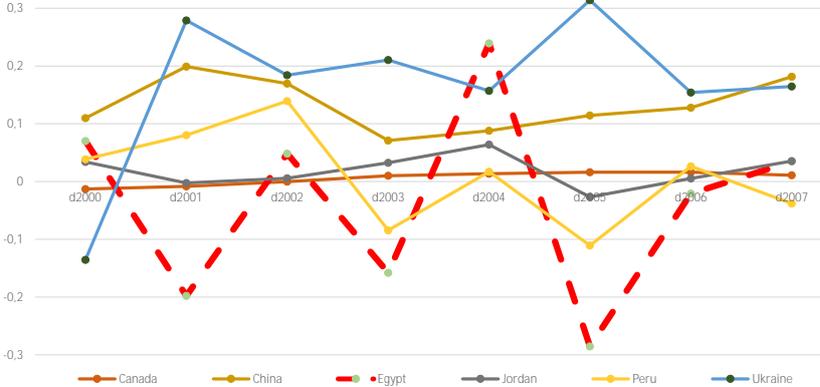


Figure 10. Income as share of GDP per capita - values calculated from available World Bank Data

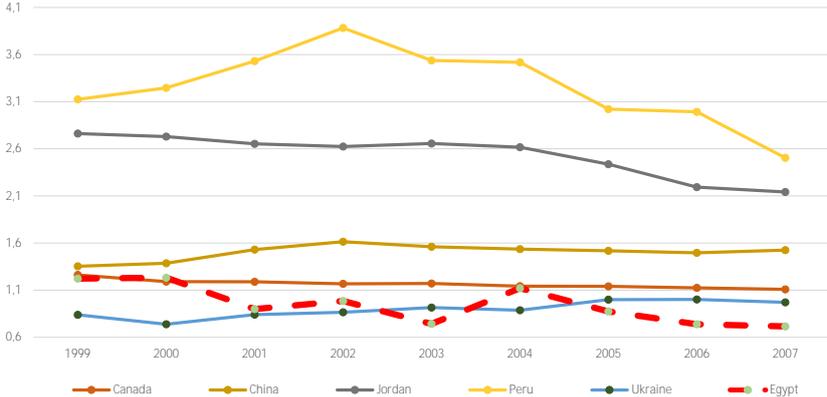


Table 1. Logit regression: decision of whether to give private lessons

Variable	Coefficient (Std. Err.)	dy/dx	$P >  z $	
Age	-0.017 (0.011)	-.0041	0.114	
gender	2.401 (0.130)	.5304	0.000	**
permanent contract	0.445 (0.352)	.1095	0.207	
adequate salary	0.000 (0.000)	.0000	0.000	**
somewhat dissatisfied	0.057 (0.406)	.0136	0.888	
satisfaction neutral	0.208 (0.481)	.0487	0.665	
somewhat satisfied	0.100 (0.353)	.0239	0.777	
completely satisfied	0.447 (0.358)	.1050	0.212	
salary 501 - 1200	-1.177 (0.702)	-.2855	0.094	†
salary 1201-2000	-1.421 (0.718)	-.3293	0.048	*
salary 2001-2500	-1.569 (0.737)	-.3733	0.033	*
salary 2501+	-1.438 (0.803)	-.3411	0.073	†
intercept	-0.310 (0.813)		0.703	
<hr/>				
N	1471			
log-likelihood	-780.366			
$\chi^2_{(12)}$	361.788			
$R^2$	0.220			

Table 2. To what extent does giving private lessons affect teachers? Responses in percent:

	Nature of Effect					Degree of Effect				
	Positive	No effect	Negative	Very Weak	Weak	Moderate	Strong	Very Strong		
Financial income	91.8	1.9	6.3	17.1	16.2	15.4	22.8	28.6		
compliance with law	26.5	24.7	48.8	34.0	14.7	15.7	21.3	14.3		
financial incentives	41.5	44.7	13.8	52.4	9.7	10.4	11.9	15.6		
good reputation	51.1	22.0	26.8	29.6	12.3	15.2	17.7	25.2		
perception of family	49.2	33.2	17.6	41.6	10.6	16.8	16.8	14.2		
perception of neighbors	21.2	39.8	39.1	50.6	5.3	19.3	16.8	8.0		
perception of colleagues	19.2	44.8	36.0	55.7	6.2	16.6	14.0	7.5		
perception of students	30.7	33.5	35.8	43.4	10.1	17.1	17.4	12.0		
perception of parents	25.0	29.8	45.1	39.6	5.7	18.0	21.9	14.8		
perception of friends	22.2	51.7	26.2	61.9	4.2	14.4	10.9	8.6		

Table 3. To what extent do the following factors affect your satisfaction with your job as a teacher? Responses in percent:

	Degree of Effect				
	Very Weak	Weak	Moderate	Strong	Very Strong
income	6.7	15.2	27.1	16.7	34.3
student love and respect	.3	.9	9.6	30.2	58.9
adherence to professional ethics	.6	.7	3.7	27.0	68.0
reputation	.3	.7	3.0	21.0	74.9

Table 4. Yearly cost in EGP for private tuition and schooling: Cost per subject are per child; total cost per child include fees for private lessons and school fees

	Arabic studies	English	French	German	Math
Average	323.30	316.16	595.50	1401.11	306.50
number of observations	1503.00	1549.00	44.00	9.00	1565.00
variance	96098.26	101910.77	322377.51	6285811.11	103887.76
median	245.00	240.00	400.00	480.00	225.00
maximum	8000.00	8000.00	2800.00	8000.00	8000.00
minimum	20.00	30.00	32.00	210.00	20.00

	Science	Social	Total cost per child	Total cost per Family
Average	309.18	291.88	881.45	1479.36
number of observations	908.00	873.00	2494.00	1486.00
variance	126806.89	121172.97	2004432.96	4495928.50
median	240.00	225.00	605.00	1000.50
maximum	8000.00	8000.00	48700.00	48700.00
minimum	20.00	16.00	35.00	35.00

Table 5. Yearly cost in EGP for remedial lessons: Cost per subject are per child; total cost per child only include fees for remedial lessons

	Arabic studies	English	French	German	Math
Average	146.46	140.70	199.23	36.00	147.75
number of observations	472.00	400.00	13.00	1.00	434.00
variance	8345.64	5210.64	11741.03		6946.64
median	120.00	120.00	200.00	36.00	135.00
maximum	1080.00	480.00	480.00	36.00	675.00
minimum	12.00	30.00	30.00	36.00	8.00

	Science	Child Social	Total Cost per Child	Total Cost per Family
Average	157.16	155.53	491.64	698.39
number of observations	263.00	250.00	554.00	390.00
variance	7694.07	7300.45	113746.47	273422.54
median	160.00	160.00	400.00	560.00
maximum	675.00	675.00	2700.00	4000.00
minimum	30.00	40.00	50.00	50.00

Table 6. Monthly income in EGP of teachers from private tutoring on the basis of calculated average and median fees, as stated by parents (Note: the basis for these numbers are derived from the individual statements of parents and teachers that include a number of unknowns and distributional biases, and thus might deviate from real values)

	Income Median	Income Mean
Average	1069.706	1480.228
number of observations	844	844
variance	11105142	21076287
median	337.5	466.8343
maximum	35714.25	49200.8
minimum	12.5	17.40263

Table 7. To what extent does your income affect your satisfaction? Responses in percentage (no significant correlation)

	Very weak	Weak	Moderate	Strong	Very strong	Sample size
less than 500	46.2	15.4	23.1	15.4	0.0	13
501 - 1200	6.0	16.0	27.7	17.9	32.4	318
1201 - 2000	7.3	14.4	26.0	17.7	34.7	724
2001 - 2500	5.9	15.3	28.9	14.4	35.4	353
2501 - 3000	2.5	17.5	28.8	12.5	38.8	80
3001 - 3500	0.0	25.0	12.5	12.5	50.0	8
3501 +	0.0	0.0	50.0	50.0	0.0	2
Correlation Coefficient:	.034 Sig. (2-tailed / Spearman's rho):				.192	

Table 8. To what extent do you feel that your gross monthly salary is adequate for appropriate living conditions for you and your family? Responses in percentage (significant but weak correlation)

	Not at all	Not	Somewhat	Adequate	Very	Sample size
less than 500	69.2	15.4	7.7	7.7	0.0	13
501 - 1200	31.4	46.2	18.2	4.1	0.0	318
1201 - 2000	28.7	44.8	23.5	3.0	0.0	724
2001 - 2500	29.7	41.1	24.4	4.2	0.6	353
2501 - 3000	17.5	47.5	27.5	6.3	1.3	80
3001 - 3500	12.5	75.0	0.0	12.5	0.0	8
3501 +	0.0	100.0	0.0	0.0	0.0	2
Correlation Coefficient:	.071** Sig. (2-tailed / Spearman's rho):				.006	

Table 9. Correlations between the adequacy of monthly salary and the ratio / difference between nominal wage and the stated wage considered to be appropriate indicating Spearman's rho: significant and positive

	Adequate income	Ratio
Adequate income ratio	Correlation Coefficient Sig. (2-tailed)	1.000 .240** .000
adequate income - difference	Correlation Coefficient Sig. (2-tailed)	1.000 -.275** .000
N	1498	1495

Table 10. Problems children are facing when going to school - parents' responses in percent

School is in distant location?	Heavy bag due to carrying all books	No secure route to walk to school	No secure means of transportation	Other (mention):
18.8	14.0	13.2	11.8	0.6

Table 11. Share of child absence - parents' responses in percent

No way to know	Weak	Moderate	High	Very high
16.6	55.1	22.2	5.2	.9

Table 12. Reasons for not sending children to a private school - parents' responses in percent

Prohibitive	Indifferent from public	Too far	Other
92.9	5.3	15.8	0.7

Table 13. Is the tutor the same person who teaches the child at school? Is the lesson mandatory - parents' responses in percent

Yes	no	Don't know	Mandatory	Optional
50.3	49.2	.5	18.5	81.5

Table 14. Location of private lessons - parents' responses in percent

School	Teacher's home	Student's home	private lesson centers	Don't know	Other (mention):
9.5	39.0	24.5	7.9	0.2	0.3

Table 15. First part: Methods used by teachers to force students to take private classes- Second part: other reasons for sending children to private tutoring - parents' responses in percent

Mis-treatment	Expulsion from class	Arbitrary scores	Teacher does not explain	Other (mention)
11.8	78	11.8	5.5	1.2
Poor teaching	Crowded classrooms	Special care	Difficult curriculum	Desire to excel
26.4	42.0	10.1	48.3	49.9

Table 16. Degree of satisfaction with quality of education - parents' responses in percent

Not	Somewhat not	Neutral	Somewhat	Completely
41.2	28.3	7	21.1	2.4

Table 17. Reasons for dissatisfaction and their importance

	Not at all	Not	Somehow	Important	Very
Difficult curriculum	1.8	7.6	15.6	34	40.9
teacher relies on memorization	0.9	4.3	15.4	39	40.4
teachers lack commitment	0.3	1.8	4.4	18.9	74.6
private lessons	.3	1.3	2.4	13.6	82.4
crowded classrooms	0.6	1.7	3.6	21.3	72.7
mistreatment by teacher	8.1	9.3	27.9	31.6	23.1
bad student behavior	.9	5.1	11.1	28.8	54.0

Table 18. The effectiveness of the parents' council - parents' responses in percent (Note: only 8.2% responded to this question)

Very weak	Weak	Moderate	Strong	Very strong
30.9	18.7	35.0	8.9	6.5

Table 19. Computer literacy of children - parents' responses in percent

Very weak	Weak	Moderate	Strong	Very strong
35.0	25.6	25.3	11.9	2.3
access to:	computer	45.0	Internet:	18.7

Table 20. Educational background of parents - parents' responses in percent

Illiterate	Read & write	< Intermediate	Intermediate
25.33	18.02	13.16	30.19
< University	University	> University	
3.79	9.24	0.27	

Table 21. Actual number and appropriate number of students in class - teachers' statement

	Students in Class	Appropriate number
Average	52.3	31.2
n. of observations	1498	1498
variance	140.5	41.4
median	50	30
mode	50	30
maximum	80	60
minimum	10	15

Table 22. Importance of reasons for students to drop out - teachers' responses in percent

	Very weak	Weak	Moderate	Strong	Very strong
Congested classrooms	4.4	12.1	20.2	28.9	34.3
difficult curricula	2.5	12.6	29.9	27.9	27.1
access to school	35.3	34.4	17.9	6.4	5.9
need for family assistance	3.9	11.4	17	29.6	38.1
family culture	15.7	19.8	18.4	18.6	27.4
health	31.8	30.8	19	7.1	11.3

Figure 11. Unemployment rates and labor force according to educational level - values calculated from CAPMAS Annual Labour Force Survey (2013) data.

