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**Private Educational Expenditure Inequality  
between Migrant and Urban Households  
in China's Cities**

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# Private Educational Expenditure Inequality between Migrant and Urban Households in China's Cities \*

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## Abstract

China's household registration (hukou) system restricts access to public schools to children without local city hukou. Migrant households thus need to finance privately all education-related costs their children incur. In contrast, local urban households often top-up their spending with private tutoring. Consequently, private educational expenditure of households in China's cities reflects both willingness to investment in human capital and institutional constraints. We compare the educational expenditure of parents migrating with children to China's cities to that of local urban parents, with a special focus on the role of the household registration system (hukou) in shaping these inequalities. We find that overall expenditure of migrants overwhelmingly exceeds that of locals after controlling for social and economic characteristics, but expenditure types are different. More detailed analysis of three subcategories of the education-related expenditure shows that migrant households spend more on tuition and sponsorship compared to households with local city hukou, but much less on private tutoring.

**Keywords:** Chinese internal migrant children; educational investment; hukou registration

**JEL classification:** O15, I31, J13, R23

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# 1 Introduction

China's spatially unequal economic development motivates many Chinese parents to move from rural to urban areas and from poorer cities to more affluent ones. In their endeavor to better integrate into the host cities and secure a promising future for their children, migrant households have an incentive to invest into their offspring's education. A better education would allow their children to facilitate the access to the labor market and improve their productivity, as has been argued by Schultz (1961). The amount that families invest is however doubly constrained: on the one hand the household income caps what households can afford to spend, but on the other hand, administrative hurdles hampering the enrollment of their children in free public schools spur education-related costs for them. By studying the educational expenditure of households in China's cities, this paper aims to shed light on whether the migrant parents invest differently for educating their children from that of local residents in the host cities.

In the wake of Becker's seminal 1963 book introducing the human capital theory, a vast economic literature has suggested that investment in education and training increases productivity and labor market earnings (Becker, 1993). For the immigrants, a higher education plays an important role in narrowing their earning differentials from the natives (Algan et al., 2010). Education is also considered as an effective instrument for policymakers to help the immigrants achieve the integration and assimilation into the local societies (Paola and Brunello, 2016).

Considering the importance of education, there is a large literature in attempting to explore the determinants of private household educational expenditure (Galor and Zeira, 1993; Nachyba, 1999; de la Croix, 2003; just to mention a few). Combining with the immigration literature, the post-migration investment in education has also been investigated by many researchers (Borjas, 1982; Hashmi-Khan, 1997; Tubergen and Werfhost, 2007; Dustmann and Glitz, 2011; Cobb-Clark et al. 2005; just to mention a few), but few of them focus on the educational investment heterogeneity among different ethnicity in the host country. One of the exceptions is the survey did by Mitrut and Wolff (2014), who looked at whether immigrant Muslims in France invest differently in their children's education compared to non-Muslims immigrants. They find no evidence of the educational achievement difference between children of different re-

ligions but more within-family inequality in educational resources distribution among Muslims households relative to non-Muslims.

By comparing educational expenditure of migrant households to that of local residents in the host cities, this paper contributes to the strand of literature in twofold. First, instead of making comparisons among groups of people from different origins of the countries, the large-scale the Rural-Urban Migration Survey in China (RUMiC) enables us to investigate how a unfavorable policy implemented by local authorities towards internal migrants can shape the inequality in education within the cities in China. Second, a large amount of children who migrate together with their parents to the cities, amounting to 35 million in 2015 (China Labor Bulletin, 2018), have attracted lots of attention of the recent academic studies, but most of them concentrated mainly on the children's physical and mental health (Qin and Albin, 2010; Lee, 2011; Hu et al., 2014; Zhao and Liu, 2016, among others) or their school achievement and academic performance (Wang, 2008; Liu et al., 2016; just to mention a few.). This article however takes a different perceptive and explores the educational expenditure (investment) differentials between migrant families and the locals in the host cities.

Households dwelling in China's cities may sustain different levels of investment in order for their children to reach to the same level of educational achievement. Households' total education-related expenditure can be expected to increase with expected private returns to education. Migrant households may invest less than urban households since some evidence suggests that private returns to education are smaller for migrant households than for non-migrant households (Yao et al., 2018). The total spending gap might at the same time be narrowed by virtue of the hukou policy (a household registration system), which restricts the benefit of public spending on education solely to urban households who enroll their children in nearby public schools and generates costs for migrant families whose children join the same local public schools. The choice of private or public schools by local and migrant households might both mitigate or enhance the spending gap: richer households may choose to pay for good quality private or public schooling instead of contenting themselves with the local free public school, whereas migrants may turn unwillingly to low quality private schools simply because they are unable to afford attending the public schools<sup>1</sup>.

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<sup>1</sup>The depiction of hukou system and the broad categories of education-related costs of migrant households is detailed in Section 2.

The main contribution of this paper is to assess the net effect of both household's choices and the impact of the administrative hurdles they face through comparing the total education-related expenditures of households holding a local city hukou to that of households lacking a local hukou. Beyond the analysis of total spending on education, comparisons of the three broad categories of educational expenditures, namely tuition fees, sponsorship fees and private tutoring fees allows us to gauge explanations for the patterns of total spending we observe. A subsequent analysis limited to the households sharing the same policy treatment but with different migration backgrounds could be considered to better reflect the tastes of families, since institutional arrangements for these families are the same.

Drawing on the first wave of the Rural-Urban Migration Survey in China (RUMiC), we show that migrant households with children migrating to cities have higher educational expenditure than urban households, after controlling for social and economic characteristics. It appears from the more detailed analysis of subcategories of educational expenditure that migrant households spend large amounts on tuition and sponsorship, which are a consequence of the hukou policy. Private tutoring expenditure on the other hand is much larger for urban households. The comparison among households having the same hukou status and differing in migration background leads to the conclusion that the latter spend less than the former. Tuition expenditure is lower for permanent migrants than for urban local households but the opposite is true for sponsorship and no differences are observed for private tutoring expenditure.

The rest of this paper is structured as follows. Section 2 briefly depicts the hukou system and education-related cost in China. Section 3 outlines a theoretical framework. Section 4 describes the data and the descriptive statistics. Section 5 presents the empirical strategy. The results are discussed in Section 6. Section 7 compares the difference in educational expenditure between permanent migrant families and local urban families. The last section concludes.

## **2 The Chinese context**

In the Chinese context, admission to university is decided primarily by the ranking of pupils' scores in the National College Entrance Examination, known as Gaokao in Chinese. Pupils may participate in the Gaokao after graduating from 3 years of non-

compulsory senior high school education. Enrollment in senior high school education is itself conditioned by the successful completion of 9 years of compulsory education (the first six of which are considered primary education, the subsequent ones constituting junior high school education).

The types of costs incurred by families to educate their children depend on the level of education their offspring is attending, on the household's official registration status (hukou in Chinese), as well as on the choice of school that families make. The hukou system<sup>2</sup> is a household registration system established about six decades ago to facilitate resource distribution, to control internal migration and to monitor criminal behavior. The hukou determines individuals' official place of residence and submits the right to migrate inside China to the approval of local governments. Each person is ascribed a household registration status (or hukou status) classified either as "rural" or as "urban", which ties the person to a single administrative unit. An individual must be registered in one and only one place and can only draw on welfare benefits, such as public education, in the place of registration. Families were originally registered where they permanently resided when the policy was first enforced, in the late 1950s. Subsequently children have automatically inherited the hukou status of one of their parents<sup>3</sup>. Children of migrants holding a rural hukou are thus still deemed rural, even if they were born in the city where their parents migrated. This policy has prevented many migrant workers' children<sup>4</sup> who lack a local city hukou from attending public schools in cities.

According to Compulsory Education Law of the People's Republic of China, enacted in 1986, no tuition may be charged to pupils enrolling in compulsory education at the public school situated in the neighborhood of their official (hukou) residence. Private schools are however free to set tuition fees as they see fit, irrespective of the level of education they offer. Some private schools are able to charge tuition fees because they provide better education than local public schools, catering especially to pupils residing officially in cities. However other private schools offer poorer education, but are able to extract tuition fees from migrant families who lack a local hukou and whose

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<sup>2</sup>This description of the hukou system draws on Chan (2010) and Hao and Yu (2015).

<sup>3</sup>Until 1998 a newborn's hukou status followed that of his mother (Chan and Buckingham, 2008).

<sup>4</sup>The 1% National Population Sample Survey conducted by China's National Bureau of Statistics in 2015 showed that there were about 34.3 million children migrating to cities with their parents (China Labour Bulletin, 2018).

children are consequently barred from free public education.

So-called “sponsorship” or “school selection” fees may be demanded of households who want their child to join a public school other than the nearby school. Families holding a local hukou may choose not to enroll their offspring in the public nearby school presumably because the local school’s quality is deemed unsatisfactory. Migrant families, the vast majority of whom do not have a local hukou in the city they migrated to, are charged sponsorship fees or are forced to offer “donations” to the public schools where they register their children, mirroring tuition fees that are demanded by private schools. Sponsorship fees tend to be higher in more affluent cities (Zhang, 2017) and they are far from insignificant: according to Goodburn (2009), a child without a local residence permit in Beijing was required to pay per term extra fees ranging from RMB 1200 (\$175) to more than RMB 8000 (\$1167).

Education-related expenditures also arise for households from the hiring of private tutors, a practice which is very common in China’s cities regardless of the educational level attended by the pupils.<sup>5</sup> Zhang and Liu (2016) estimate that in 2004 around 74% of students in elementary schools, 66 % of junior high school students and 54% of senior high school students in urban China received private tutoring. Many parents see academic private tutoring as a supplement to school-provided education that can enhance the chances of admission to (most prestigious) universities. Private tutoring is often provided by teachers as one-to-one instruction tailored to the needs of the individual pupil, but also in the form of optional after-school classes aimed to consolidate the lessons learned in class or as optional supplementary classes in cram schools, whose stated aim is to improve the children’s test scores in school. Private tutoring also extends to non-academic skills, since mastering foreign languages and having artistic or athletic skills also count among the acceptance criteria used by prestigious higher education institutions.

Finally a more modest category of education-related expenditures borne by households spring from buying books and other school material, uniforms, food provided at the school, etc. The 2015 version of the Law on Compulsory Education stipulates that

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<sup>5</sup>Though in the field of educational studies it is still a debate whether private tutoring benefits children’s school performance, Zhang and Liu (2016) examined the effects of private tutoring on educational performance of children in China, they found significantly positive effects of private tutoring on children’s language and math test scores.

only slim profits may be drawn in China from selling textbooks used in public schools (OECD, 2016).

### 3 The model

We consider only<sup>6</sup> households living in urban China and their expenditure decision regarding children's education. Suppose households of generation  $t$  differ in their origin (and thus hukou status), in their human capital endowment  $h_t^i$  and in their taste of children's human capital accumulation.

A household  $i$  (with  $i = u$  indicating urban households and  $i = m$  being migrant households) at time  $t$  faces the following optimization problem:

$$\max_{e_t^i} h_{t+1}^i = \begin{cases} \mu [\theta^u + g^u(e_t^u)]^\eta (h_t^u)^\alpha (\bar{h}_t)^{(1-\alpha)}, & \text{if } i = u, \\ \mu [g^m(\theta^m, e_t^m)]^\eta (h_t^m)^\alpha (\bar{h}_t)^{(1-\alpha)}, & \text{if } i = m, \end{cases} \quad (1)$$

in which  $h_{t+1}^i$  is children's human capital,  $\bar{h}_t$  is human capital of the teacher. Parameter  $\mu > 0$  is the productivity of children, which we assume to be the same for all children, and  $\eta, \alpha \in (0, 1)$ .  $\theta^u > 0$  captures the facts that children with urban hukou enrolling in public schools gain human capital even without private education investment, while  $\theta^m \geq 0$  captures the situation that migrant children with rural hukou may not benefit from the public education if private investment is absent.  $g^i(e_t^i)$  represents household  $i$ 's private education-related investment which essentially depends on the hukou statute of the household. Thus we can assume

$$g^m(\theta^m, 0) = 0 \quad \text{and} \quad g^m(0, e_t^{m,r}) \geq 0 \quad \text{if} \quad e_t^m \geq 0.$$

Equation (1) is a modification of the classical human capital accumulation formulation such as Glomm and Ravikumar (1992) and de la Croix and Doepke (2003).

Obviously, this model could be solved via the standard first order condition, provided the private household educational investment functions,  $g^u(e_t^u)$  and  $g^m(\theta^m, e_t^m)$  are known. However, as mentioned by Yuan and Zhang (2015), some households' investment in their children's education is a substitute to public spending, while some

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<sup>6</sup>A more general theoretical study of Chinese internal migrant and their concerns of their children's location and school performance can be found in Chen et al. (2019).



household's spending is a complement to public spending, and for other households, the expenditure may serve as both a supplement and a complement. Therefore, instead of solving the first order condition by assuming some given educational investment functions, we devote to the empirical test to explore the differences in educational expenditure among of households with different hukou status.

## 4 Data and Descriptive Statistics

The data used in this study come from large-scale Urban Household Survey (UHS) and Migrant Household Survey (MHS) for the year 2008. The UHS and MHS are two of the three independent surveys forming the Rural Urban Migration in China (RUMiC) survey. The two surveys, started in the early 2008, were carried out in 15 cities in 9 provinces : Shanghai, Guangdong, Jiangsu, Zhejiang, Anhui, Hubei, Sichuan, Chongqing and Henan. The sample of UHS was randomly drawn on the basis of urban residents' permanent address, whereas the survey for migrants first randomly selected workplace within defined boundary and subsequently migrant workers in each workplace were randomly chosen based on their birth months<sup>7</sup>. Face-to-face interviews with the selected individuals and the members of their households were performed. Households are defined as persons living together at the time of the survey and sharing income and expenditure.

The questionnaires of both surveys collect rich information on demographic and socio-economic characteristics of household members living in the city. Data on broad household expenditure categories is also collected. Parents or custodians declare the education-related expenditure they incurred the year before the survey separately for each child.

Beside households' total educational expenditure, we consider four categories of expenditure related to education that were collected in the MHS and UHS. They are tuition fees, private tutoring expenditure, sponsorship expenditure and other educational expenditure (such as cost of school uniform, etc.). As described before, tuition fees are not charged in the public schools during the period of compulsory education, private schools may charge them. Expenditure for private tutoring at school and out-

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<sup>7</sup>A detailed description of the sampling method for migrants is provided by Kong (2010) and Akguc et al. (2014).

side school is collapsed together. School selection fees and donation fees are joined together and labeled sponsorship expenditure. Migrant families without local city hukou have to pay sponsorship fees in order for their children be enrolled in public schools. Both migrant and urban households pay donation fees or school selection fees if they want to register their children in schools other than the neighboring public school.

The MHS and UHS cover 5007 and 5002 households respectively, of which 2159 migrant households and 2748 urban households reported having at least one child who was no older than 16 or was older than 16 but still in school. Our analysis is limited to the 632 households migrating with at least one child who is in education and the 1795 local urban households with at least one child still studying<sup>8</sup>. Migrants in this paper are defined as individuals who did not hold the local city hukou at the time when the survey started.

For the main analyses we aggregated educational expenditure at the household level. This is reasonable because of China's one child policy, robustness checks represented in Section 6.2 show conclusions to be similar if individual level data are used.<sup>9</sup>

We report as main empirical results the findings on absolute expenditure of households. But the conclusions we draw would not change if the budget share would be analyzed instead (see Section 6.2).

Table 1 compares migrant and local urban households in terms of education-related expenditure and income. The yearly total educational expenditure of households is on average spend RMB 3232 (\$471), significantly lower than RMB 3791 (\$550) paid by local urban residents. However, migrant's expenditure on education constitutes a larger share of their household income than local's expenditure on education. Tuition fees account for more than half of households' total educational expenditure, both for migrant households (60%) and for local urban households (57%), but the difference is not significant at the 1% significant level. The similar tuition fees paid by local and

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<sup>8</sup>We excluded households with children that were younger than 6, older than 25 or aged between 16 and 25 but not in school. Children who had dropped out of school (26 urban children and 9 migrant children) are not included. We also removed migrant households who left all their children behind. 32 migrant households and 286 local urban households who had missing values on our control variables were also dismissed.

<sup>9</sup>Only 28 migrant households in our sample reported having taken only one child and leaving another behind.

	Households migrating with children	Local urban households	t-value difference
Total educational expenditure	3233 (3742)	3791 (5585)	<b>2.81</b>
<i>of which</i>			
Tuition	1936 (2647)	2175 (4928)	1.53
Private tutoring expenditure			
Private tutoring expenditure at school	209 (498)	255 (774)	1.69
Private tutoring expenditure outside school	154 (557)	809 (1791)	<b>13.72</b>
Sponsorship expenditure	676 (2198)	342 (1560)	<b>-3.51</b>
Other educational expenditure	266 (569)	210 (668)	-1.73
Household income per capita	13085 (10308)	19324 (16551)	<b>11.02</b>
Observations	632	1795	

*Source of data:* RUMiC data. MHS wave 2008 and UHS wave 2008. Notes: Standard deviations are reported in parenthesis. Total educational expenditure, tuition, private tutoring at school, private tutoring outside school, other educational expenditure and household income per capita are measured in RMB per year. Bold numbers indicate statistical significance at 1% level.

Table 1: Yearly educational expenditure and income by household hukou status

migrant parents are most likely due to the fact that local parents prefer to pay tuition for admission in better quality private schools (rather than free-charging public school) whereas migrants' children are rejected by public schools in destination cities and thus have no other choice than paying tuition fees to private migrant schools.

Migrants allocate about RMB 363 (11% of their total expenditure) to private tutoring and RMB 676 (20%) to sponsorship fees. The trend is opposite for local households, who allocate about RMB 1064 (28%) to private tutoring and RMB 342 (9%) to sponsorship fees. The sizable gap in private tutoring expenditure is accounted for especially by private tutoring expenditure outside school (cram schools, tutoring for private lessons etc.), where local families invest almost five times as much as migrant ones. The lower expenditure of migrants for private tutoring is mirrored by the higher sponsorship expenditure of these households in comparison with local ones. The sponsorship expenditure of migrant households is almost double.

No difference is observed in other educational expenditure among migrant and local urban households.

Per capita household income of local urban residents is on average 1.5 times higher than that of migrants. Panel A in Table 2 shows that more than half of migrant house-

holds cluster in the first two quintiles of the household income distribution and only 8% of migrant households are in the top quintile. By contrast, a quarter of urban households are in the top income quintile.

To gauge the relationship between educational expenditure and income, Panel B in Table 2 displays the average educational expenditure of different types across the income quintiles. As we move up in the income distribution, the total educational expenditure, the tuition as well as the private tutoring expenses also increase. This pattern does not hold true of sponsorship fees, which are higher in the first quintile than in the second or in the fourth income quintile, suggesting that households may not be able to choose sponsorship fees according to their income and must pay the fees fixed by schools (provided they afford them). Average expenditure on private tutoring for the families in the richest quintile is about 4 times higher than that of the households in the bottom quintile, whereas tuition fees are only about 2.2 times higher.

Income quintile	1st	2nd	3rd	4th	5th
Panel A:					
<i>Share of households</i>					
Households migrating with children	0.324	0.217	0.223	0.155	0.081
Local urban households	0.157	0.194	0.192	0.216	0.242
Panel B:					
Total educational expenditure	2393 (2878)	3147 (3930)	3430 (3631)	3906 (4009)	5354 (8735)
Tuition expenditure	1354 (1900)	1890 (3221)	1907 (2926)	2388 (3307)	3027 (8008)
Private tutoring expenditure	437 (1055)	651 (1149)	815 (1689)	1003 (1830)	1503 (2571)
Sponsorship expenditure	443 (1696)	399 (1299)	480 (1740)	311 (1250)	512 (2497)

*Source of data:* RUMiC data. MHS wave 2008 and UHS wave 2008. Notes: Standard deviations are reported in parenthesis. Educational expenditure, tuition, private tutoring expenditure are measured in RMB per year.

Table 2: Average household educational expenditure across household income quintiles

The other relevant characteristics of households as well as the characteristics of household heads are summarised in Table 3. Migrants are more likely than locals to send their children to private schools. Based on the available data, we are unable to distinguish between private schools which are of better quality than public schools (most

likely used by local urban households) and poor quality private schools used by migrants unable to attend public schools. The per household number of children in school is slightly higher for migrants compared to urban households, which is expected because the “one-child policy” in China has always allowed households holding a rural hukou to have a second child if their first child was a girl.

	Households migrating with children	Local urban children households	t-value difference
Number of children in school (per household)	1.31 (0.549)	1.05 (0.228)	<b>-11.35</b>
Having children enrolling in private schools (1=yes; 0 otherwise)	0.144 (0.351)	0.054 (0.225)	<b>-6.05</b>
Household head’s age	38.27 (5.61)	44.80 (9.07)	<b>21.10</b>
Household head’s gender (1=male; 0 otherwise)	0.739 (0.44)	0.617 (0.486)	<b>-5.84</b>
Household head’s level of education (1 = high school and above; 0 otherwise)	0.237 (0.426)	0.704 (0.457)	<b>23.26</b>
Household head’s occupation			
Service occupation	0.555	0.198	<b>-16.30</b>
Blue-collar occupation	0.271	0.330	<b>2.86</b>
White-collar occupation	0.087	0.279	<b>12.42</b>
Other	0.087	0.193	<b>7.25</b>
Region			
Central	0.467	0.314	<b>-6.75</b>
Coastal	0.337	0.487	<b>6.75</b>
West	0.196	0.199	0.176
Observations	632	1795	

*Source of data:* RUMiC data. MHS wave 2008 and UHS wave 2008. Notes: Standard deviations are reported in parenthesis. Bold numbers indicate statistical significance at 1% level.

Table 3: Household characteristics by household hukou status

Consistent with literature, household heads tend to be male in both types of households. As expected, the heads of migrant households are younger and much less likely to have gained a high school or higher degree. Only one in four migrant household heads hold at least high school education, compared to 70% of their urban counterparts.

Consequently, 82% of migrant heads of household report working either in blue collar or in service occupations and only 8.7% work in white collar occupations. The proportions for urban households are 52% and 27% respectively. These occupation categories have been defined following China’s Bureau of Statistics: service occupations

includes the lowest level of occupations, for instance in the hotel or catering industry, followed by blue collar occupations which are manual occupations in sectors such as manufacturing and construction. The white collar occupations are highest in the hierarchy occupations.

To control for possible regional heterogeneity in households' educational expenditures, we introduce a set of dummies of geographic distribution of the households. Ideally province-level dummies would have been used, but insufficient observations in each category have lead us to regroup them as just three regions: the Central region includes the provinces of Anhui, Henan, Hubei. The Coastal region includes the provinces of Guangdong, Jiangsu, Zhejiang and Shanghai. The Western region regroups Chongqing and Sichuan.

## 5 Empirical Strategy

### 5.1 OLS Regression of Total Educational Expenditure

We begin the analysis by investigating the difference in total educational expenditure of migrant households and local urban households. The regression is written as :

$$\ln Y_h = \beta_0 + \beta_1 M_h + X_h \gamma + \epsilon, \quad (2)$$

where  $Y_h$  is the total household educational expenditure. To mitigate the concerns of heteroscedasticity, we use the natural logarithmic transformation of educational expenditure as the dependent variable<sup>10</sup>.  $M_h$  is a dummy variable taking a value of 1 for migrant households and 0 for local urban households<sup>11</sup>.  $X_h$  is a vector of control variables referring to characteristics of households and heads of households, such as private or public types of school, household per capita income, per household number of children in school, gender, age, level of education and occupation of household head. We also include regional dummies in the regression in order to capture region fixed effects.  $\epsilon$  is the i.i.d error term.

<sup>10</sup>For the 42 households in the sample who reported having no educational expenditure, a value of 1 is assigned.

<sup>11</sup>Some households may prefer not to report their low levels of educational expenditure. However, the survey did not explore the nature of these zero expenses, we therefore are not able to distinguish the real reported zero expenditure from the others.

## 5.2 Tobit Regression of Types of Expenditure

In order to understand the heterogeneity in patterns of education-related expenditure, we analyzed, beyond the total spending on education, the three previously defined subcategories of educational expenditure, namely tuition fees, sponsorship fees and private tutoring expenditure. In these analyses, large numbers of households in our sample have reported zero amounts of expenditure, making OLS estimation inappropriate. We rely instead on tobit models in the remainder of this section  $y$  will stand in turn for the three subcategories of educational expenditure.

The standard equation for the tobit model is the following:

$$y^* = X\boldsymbol{\beta} + \epsilon, \quad \epsilon|X \text{ Normal}(0, \sigma^2), \quad (3)$$

and

$$y = \max(0, y^*), \quad (4)$$

where  $y^*$  is a latent variable,  $X$  is a vector of explanatory variables with the first element being unity and  $\boldsymbol{\beta}$  is a column vector of coefficients. The conditional expectation of  $E(y|X, y > 0)$  is equal to:

$$E(y|X, y > 0) = X\boldsymbol{\beta} + \sigma[\phi(X\boldsymbol{\beta}/\sigma)/\Phi(X\boldsymbol{\beta}/\sigma)]. \quad (5)$$

The expectation of  $E(y|x)$  follows :

$$E(y|X) = \Phi(X\boldsymbol{\beta}/\sigma)X\boldsymbol{\beta} + \sigma\phi(X\boldsymbol{\beta}/\sigma). \quad (6)$$

For a continuous explanatory variable, the equations of marginal effects and of marginal effects conditional on being uncensored are given by:

$$\frac{\partial E(y|X)}{\partial x_j} = \Phi(X\boldsymbol{\beta}/\sigma)\beta_j, \quad (7)$$

$$\frac{\partial E(y|X, y > 0)}{\partial x_j} = \beta_j\{1 - \lambda(X\boldsymbol{\beta}/\sigma)[X\boldsymbol{\beta}/\sigma + \lambda(X\boldsymbol{\beta}/\sigma)]\}, \quad (8)$$

where  $\lambda(X\boldsymbol{\beta}/\sigma) = \phi(X\boldsymbol{\beta}/\sigma)/\Phi(X\boldsymbol{\beta}/\sigma)$  is the inverse Mills ratio,  $\phi$  and  $\Phi$  are the probability and cumulative density functions, respectively.

In our case, the variable of key interest is the binary variable  $M_h$ . We report two estimates of the effect of migration status on educational expenditure. The first is estimated including censored and uncensored observations as:  $E(y|X_h, M_h = 1) -$

$E(y|X_h, M_h = 0)$  (as in equation 6). The second one is estimated using only the uncensored observations as:  $E(y|X_h, y > 0, M_h = 1) - E(y|X_h, y > 0, M_h = 0)$  (as in equation 5).

Following Wooldridge (2010), we define,  $\hat{w}_{h1}$  is the estimated index for a migrant household  $h$  and  $\hat{w}_{h0}$  is the estimated index for a urban children household  $h$ . The estimated difference is then obtained by

$$N^{-1} \sum_{n=1}^N \{[\Phi(\hat{w}_{h1}/\hat{\sigma})\hat{w}_{h1} + \hat{\sigma}\phi(\hat{w}_{h1}/\hat{\sigma})] - [\Phi(\hat{w}_{h0}/\hat{\sigma})\hat{w}_{h0} + \hat{\sigma}\phi(\hat{w}_{h0}/\hat{\sigma})]\}$$

where  $\hat{w}_{h1} = \hat{\beta}_0 + \hat{\beta}_1 + X_h\gamma$  and  $\hat{w}_{h0} = \hat{\beta}_0 + X_h\gamma$ .

As total household educational expenditure, tuition, private tutoring expenditure and sponsorship expenditure are analyzed in logarithmic transformation.

## 6 Estimation Results

In this section we first assess the heterogeneity in total educational expenditure between migrant households and local urban households. We then report the results regarding tuition fees, private tutoring and sponsorship expenditure. A series of checks are reported to gauge the robustness of our results.

### 6.1 Estimation Results of Total Educational Expenditure and Three Subcategories

Table 4 displays results estimated according to the strategy described in the previous section. Column (a) presents OLS regression coefficients of the log transformation of total educational expenditure on explanatory variables. Columns (b) to (d) report the maximum likelihood Tobit regression coefficients of the log transformation of three subcategories of educational expenditures on the same explanatory variables.

According to the first row of column (a), the null hypothesis that there is no difference in total educational expenditure between migrant households and local urban households is rejected at the 1% significance level. After controlling for family and regional characteristics, migrant households are found to spend 36%<sup>12</sup> more than urban

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<sup>12</sup> $Exp(0.309) - 1 = 1.36 - 1 = 0.36$ .



households on their children's education in 2007. This reverses the conclusion reached based on the unconditional mean difference reported in Table 1. Household spending on education is highly related to household income, with households in the top income quintile spending 66% more than those in the 1st quintile.

As expected, the total spending on education for households with children studying in private schools is higher than families whose children are enrolled in public schools. Every extra child increases the household's educational expenditure by 55%. Regarding the characteristics of household heads, expenditure on education raises around 14.6% if the head of family is female. The age of the household head has a significant and positive effect. The household heads who have earned at least a high school degree spend more on their children's education. However, the heads' occupation influences little the family's educational expenditure everything else being equal. Households in the Coastal region have the highest educational expenditure, which might be explained by the fact that some areas of China's east-coast are better developed and many high-quality private schools are located there. Parents therefore have more choices for their children's private education.

To refine our findings that migrants spend more than local residents on their children's education, we estimated the impact of the same set of explanatory variables on migrants' and locals' expenditure for tuition, sponsorship and private tutoring separately. The Tobit maximum likelihood coefficients reported in columns (b) to (d) of Table 4 not being directly interpretable, we show in Table 5 the average difference between the expenditure of migrants and locals for the three subcategories. Full regression coefficient tables are presented in the Appendix.

The estimates in the first row in Table 5 show that, after controlling for all family and regional characteristics, the spending of migrant households on tuition is substantially higher than that of local urban households and statistically significant at the 1% level. Migrant households are shown to spend 133% more on tuition than urban ones (in column (a))<sup>13</sup>. The significantly higher amounts spent on tuition by migrants reflect the unequal accessibility of public schools among children of local and migrant parents: many migrants who fail to access public school education turn to private migrant schools, where tuition fees are often set at levels more reasonable than those charged by public schools for migrant students. This in line with the findings of Lai et al (2014).

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<sup>13</sup> $Exp(0.844) - 1 = 2.33 - 1 = 1.33$ .

<i>Dependent variables in natural logarithm</i>	<i>OLS coefficients</i>		<i>Tobit maximum likelihood coefficients</i>	
	Total educational expenditure	Tuition expenditure	Private tutoring expenditure	Sponsorship expenditure
Variables	(a)	(b)	(c)	(d)
Migrant households migrating with children	0.309*** (0.089)	0.848*** (0.139)	-1.79*** (0.355)	5.49*** (0.908)
Per capita household income (ref : first quintile)				
Second quintile	0.269*** (0.102)	0.102 (0.154)	1.04*** (0.392)	0.034 (1.01)
Third quintile	0.365*** (0.10)	0.242* (0.155)	1.03*** (0.395)	0.883 (1.01)
Fourth quintile	0.399*** (0.106)	0.353** (0.160)	0.716* (0.407)	-0.013 (1.08)
Fifth quintile	0.504*** (0.119)	0.047 (0.170)	1.51*** (0.429)	1.32 (1.15)
Having children enrolled in private schools (1= yes; 0 otherwise)	0.349*** (0.117)	0.694*** (0.460)	0.124 (0.265)	2.03* (1.11)
Per household number of children in school	0.443*** (0.082)	0.511*** (0.140)	-0.235 (0.365)	0.950 (0.835)
Household head's age	0.035*** (0.005)	0.074*** (0.006)	-0.065*** (0.016)	-0.140** (0.045)
Household head's gender (1=male; 0=female)	-0.146** (0.071)	-0.408*** (0.105)	0.046 (0.265)	0.953 (0.722)
Household head's level of education (1 = high school and above; 0 otherwise)	0.273*** (0.076)	0.211* (0.112)	1.13*** (0.284)	-0.671 (0.761)
Household head's occupation (ref: Blue-collar occupation)				
White-collar occupation	0.039 (0.084)	0.135 (0.136)	-0.232 (0.339)	-0.717 (0.954)
Service sector occupation	0.008 (0.080)	0.038 (0.130)	0.012 (0.328)	-0.03 (0.862)
Other occupation	-0.481*** (0.112)	-0.896*** (0.165)	0.374 (0.416)	1.32 (1.11)
Region (ref: Central region)				
Coastal	0.501*** (0.079)	0.478*** (0.117)	0.652** (0.296)	-3.03** (0.808)
Western	0.439*** (0.089)	0.852*** (0.135)	0.380 (0.343)	0.694 (0.868)
Constant	4.76*** (0.248)	1.92*** (0.361)	3.68*** (0.914)	-6.99*** (2.43)
Observations	2427	2427	2427	2427

*Source of data:* RUMiC data. MHS wave 2008 and UHS wave 2008. Notes: Total educational expenditure is the sum of tuition, private tutoring expenditure, sponsorship expenditure and other educational expenditure. Yearly total educational expenditure, tuition, private tutoring expenditure and sponsorship expenditure are measured in RMB. Standard errors are reported in parenthesis. Number of left-censored observations at  $\ln(\text{tuition})=0$ : 194. Number of left-censored observations at  $\ln(\text{private tutoring expenditure})=0$ : 1063. Number of left-censored observations at  $\ln(\text{sponsorship expenditure})=0$ : 2035. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

Table 4: Regression coefficients for household educational expenditure and its subcategories

	$E(\ln(y) X, M_h = 1)-$ $E(\ln(y) X, M_h = 0)$ (a)	$E(\ln(y) X, y > 0, M_h = 1)-$ $E(\ln(y) X, y > 0, M_h = 0)$ (b)
Tuition expenditure	0.844*** (0.14)	0.821*** (0.135)
Sponsorship expenditure	1.03*** (0.20)	1.18*** (0.205)
Private tutoring expenditure	-1.10*** (0.208)	-0.781 *** (0.148)

*Source of data:* RUMiC data. MHS wave 2008 and UHS wave 2008. Notes: Tuition, sponsorship and private tutoring expenditure are measured in RMB per year. Standard errors are reported in parenthesis. Number of left-censored observations at  $\ln(\text{tuition})=0$ : 194. Number of left-censored observations at  $\ln(\text{sponsorship})=0$ : 2035. Number of left-censored observations at  $\ln(\text{private tutoring in total})=0$ : 1063. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

Table 5: Difference in natural logarithm of tuition, sponsorship and private tutoring expenditure

The gap between migrants' and locals' spending is even larger when it comes to the sponsorship expenditure as shown in second row of Table 5. Consistent with literature and with our expectation, households holding a local city hukou spend much less on sponsorship fees than those lacking one. Goodburn (2009) also found that migrant children were charged 5 or 6 times the fees charged to local students during the stage of compulsory education.

By contrast, migrants spend overwhelmingly less than locals on private tutoring (see third row of Table 5). Drawing on households who report positive private tutoring expenditure (column (b)), we estimate the spending of migrants to be 54% lower than that of locals. One possible explanation is that tuition and sponsorship fees account for large shares of migrants households' income so that budget constraint prevents them from affording private tutoring.

Existing literature has suggested that in China, urban children's school performance is better than the migrant worker's children (Zhang et al., 2015). Hence the low educational investment in private tutoring may provide an explanation of the educational performance inferiority of migrant children to urban children.

## 6.2 Robustness of The Estimated Coefficients

A series of robustness checks are performed to verify the validity of the results presented above. The estimated coefficients for the variable of interest  $M_h$  are reported in Table 6 and in Table 7. The full tables can be found in the Appendix.

First, in panel A, we present estimates obtained by using expenditure on each individual child as opposed to household expenditure. In these estimations we also control for the birth order of the child, the gender of the child, the grade and the quality of school (as assessed by the parents). In panel B, we only include as migrants the households with non-local rural hukou. This excludes migrant children holding city hukou but coming from other cities, as these children might be able to attend public schools and might have a better social status (Chen and Buckingham, 2008). Finally, in panel C, we restrict our sample to local and migrant families having children in compulsory education because children are supposed to receive free public education during that period.

The regression coefficients in Panel A are slightly larger in magnitude compared to those estimated at the household level, but neither the sign nor the statistical significance of the results change. The results drawn from both the set of coefficients in panel B and in panel C are in line with the one presented by our baseline estimations.

We also examine the difference between migrants and local residents in the budget share they allocate to total educational expenditure, tuition, sponsorship expenditure and private tutoring expenditure. The budget share is calculated by dividing the corresponding education expenditure to the household total consumption. The estimated coefficients, presented in Table 7, lead to the same conclusions as those drawn using the absolute educational expenditure.

The share spent on tuition by migrant households is 3% higher than that of local urban households. This gap is narrowed to 2.2% if we consider only uncensored sample. In terms of sponsorship expenditure, the share spent by migrants is 1.2% larger than that spent by locals. However, the share allocated by migrants to private tutoring expenditure is 1.1% lower than that of locals.

## **7 The Educational Expenditure Gap between Permanent Migrant Households and Urban Households**

By comparing educational expenditure of migrant households who have obtained a local city hukou to that of local urban households, we investigate the difference between migrants and locals in cases when the hukou related barriers do not exist. It is hard

	OLS coefficients (a)	Tobit maximum likelihood coefficients (b)	$E(\ln(y) X, M = 1)-$ $E(\ln(y) X, M = 0)$ (c)	$E(\ln(y) X, y > 0, M = 1)-$ $E(\ln(y) X, y > 0, M = 0)$ (d)
Panel A. Individual level data				
Sample size: 2654				
Total educational expenditure	0.388*** (0.082)			
Tuition		0.790 *** (0.115)	0.787 *** (0.115)	0.768 *** (0.112)
Private tutoring		-1.65 *** (0.315)	-0.981 *** (0.179)	-0.709 *** (0.130)
Sponsorship expenditure	6.16***	1.22*** (0.793)	1.32*** (0.178)	(0.179)
Panel B. Only include migrant households with rural hukou				
Sample size: 2268				
Total educational expenditure	0.322*** (0.092)			
Tuition		0.906*** (0.153)	0.902*** (0.152)	0.877*** (0.149)
Private tutoring		-2.02*** (0.386)	-1.24*** (0.220)	-0.88*** (0.156)
Sponsorship expenditure		6.13*** (1.034)	1.15*** (0.235)	1.30*** (0.237)
Panel C. Only include households with children in compulsory education				
Sample size: 1639				
Total educational expenditure	0.380*** (0.104)			
Tuition		0.976*** (0.164)	0.966*** (0.163)	0.920*** (0.156)
Private tutoring		-1.75*** (0.366)	-1.22*** (0.248)	-0.871*** (0.176)
Sponsorship expenditure		6.51*** (0.904)	1.69*** (0.262)	1.60*** (0.233)

Source of data: RUMiC data. MHS wave 2008 and UHS wave 2008. Standard errors are reported in parenthesis. \* p<0.1; \*\* p<0.05; \*\*\* p<0.01.

Table 6: Robustness checks

	OLS coefficients (a)	Tobit maximum likelihood coefficients (b)	$E(\ln(y) X, M = 1)-$ $E(\ln(y) X, M = 0)$ (c)	$E(\ln(y) X, y > 0, M = 1)-$ $E(\ln(y) X, y > 0, M = 0)$ (d)
Sample size: 2383				
Total educational expenditure	0.034 *** (0.007)			
Tuition		0.04 *** (0.005)	0.03 *** (0.004)	0.022 *** (0.003)
Private tutoring		-0.024 *** (0.005)	-0.011 *** (0.002)	-0.008 *** (0.002)
Sponsorship expenditure		0.069 *** (0.016)	0.012 *** (0.003)	0.014 *** (0.003)

Source of data: RUMiC data. MHS wave 2008 and UHS wave 2008. Standard errors are reported in parenthesis. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01.

Table 7: The budget share spent on education-related expenditure

but possible for migrants to obtain a local city hukou, and thus become permanent migrants, either through education or through employment. In our sample there are 351 households who reported having changed their hukou to a local city one. These permanent migrant households would draw on the same welfare benefits as local urban residents, including access to free public education in the nearby school for their children.

The regression coefficients, estimated using the same strategy as the one described in Section 4 and the same control variables as the one in the analysis in Section 5, are displayed in Table 8.

	OLS coefficients (a)	Tobit maximum likelihood coefficients (b)	$E(\ln(y) X, PM = 1)-$ $E(\ln(y) X, PM = 0)$ (c)	$E(\ln(y) X, y > 0, PM = 1)-$ $E(\ln(y) X, y > 0, PM = 0)$ (d)
Sample size: 1795				
Total educational expenditure	-0.148* (0.09)			
Tuition		-0.522 *** (0.156)	-0.516 *** (0.154)	-0.490 *** (0.145)
Private tutoring		-0.188 (0.353)	-0.130 (0.242)	-0.092 (0.171)
Sponsorship expenditure		3.03 ** (1.22)	0.382 ** (0.171)	0.55 ** (0.23)

Source of data: RUMiC data. MHS wave 2008 and UHS wave 2008. The full tables can be found in the Appendix. Standard errors are reported in parenthesis. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01.

Table 8: Regression coefficients on the educational expenditure of permanent migrant households

After controlling for economic and social characteristics, a permanent migrant household would spend 14.8% less on children's education than a urban household who never change their hukou. The lower overall educational expenditure of permanent migrant households is mainly due to the lower tuition fees paid. However, the sponsorship fees they pay are 38.2% higher than that of local urban residents. These results suggest that families with migration background pursue with different means the same aim of providing their children with good education as local families: local households may pay higher tuition in private good quality schools whereas permanent migrants choose to pay higher sponsorship fees in schools of better quality.

An important difference compared to the previous results is that private tutoring expenditure is now not different between the two groups. This suggests that when institutional arrangements are the same, so migrants do not need to substitute public spending with private expenditure, their taste for the children's private tutoring does not differ.

## 8 Concluding Remarks

This paper explores how the hukou status, the family characteristics and the region of residence determine household expenditure on the childrens educational investment.

Because of the hukou system, children migrating to China's cities with their parents have limited access to free public schools. They may either pay fees to go to migrant schools or pay to be enrolled in public schools.

Using the 2008 wave of RUMiC data, we compare the educational expenditure of migrant households to that of local urban households. We find that the total educational expenditure of migrants overwhelmingly exceeds that of locals after controlling for social and economic characteristics, both in absolute amounts and as in budget shares. More detailed analysis of three subcategories of the education-related expenditure shows that migrant households spend more on tuition and sponsorship compared to households with local city hukou, but much less on private tutoring.

We also find different patterns of education-related expenditure between migrant households who have obtained a local city hukou and local urban households who did not change their hukou. When hukou barriers do not matter, we find no difference between permanent migrants and locals.

Private educational expenditure of households in China's cities reflects both willingness to invest in human capital and institutional constraints. Our results suggest the hukou policy at least the way it was implemented in 2007 put financial burdens on migrant parents. To the extent that China would like to guarantee equal educational opportunities for all children, relaxing or providing more funding to schools who accept migrant workers' children are policy options.

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## A Appendix

Dependent variable : Natural logarithm of tuition expenditure			
	Tobit	$E(y X)$	$E(y X, y > 0)$
	(1)	(2)	(3)
Migrant households migrating with children	0.848*** (0.139)	0.844*** (0.138)	0.821*** (0.135)
Per household number of children in school	0.511*** (0.140)	0.508*** (0.140)	0.492*** (0.135)
Household head's age	0.0739*** (0.006)	0.0735*** (0.007)	0.0711*** (0.006)
Household head's gender (1=male; 0=female)	-0.408*** (0.105)	-0.406*** (0.105)	-0.394*** (0.102)
Having children enrolled in private schools (1=private school; 0 otherwise)	0.694*** (0.182)	0.691*** (0.181)	0.674*** (0.178)
Per capita household income (ref : first quintile)			
Second quintile	0.102 (0.154)	0.101 (0.153)	0.0978 (0.147)
Third quintile	0.242 (0.155)	0.240 (0.154)	0.232 (0.149)
Fourth quintile	0.353* (0.159)	0.352* (0.158)	0.341* (0.154)
Fifth quintile	0.047 (0.170)	0.047 (0.169)	0.045 (0.163)
Household head's level of education (1 = high school and above; 0 otherwise)	0.211* (0.112)	0.199 (0.111)	0.192 (0.108)
Household head's occupation (ref: Blue-sector occupation)			
White-collar occupation	0.135 (0.136)	0.134 (0.135)	0.131 (0.131)
Service sector occupation	0.038 (0.130)	0.037 (0.129)	0.036 (0.125)
Other	-0.896*** (0.165)	-0.888*** (0.163)	-0.850*** (0.155)
Region (ref: Central region)			
Coastal	0.468*** (0.117)	0.465*** (0.117)	0.448*** (0.112)
Western	0.852*** (0.135)	0.848*** (0.135)	0.822*** (0.131)
Constant	1.92*** (0.361)		
Observations	2427	2427	2427

Source of data: RUMiC data. MHS wave 2008 and UHS wave 2008. Notes: Expenditure is measured in RMB per year. Number of left-censored observations at  $\ln(\text{Tuition}) = 0$ : 194. Number of uncensored observations: 2233. Standard errors are reported in parenthesis. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

Table 9: Tobit coefficients for tuition fees

Dependent variable : Natural logarithm of private tutoring expenditure			
	Tobit (1)	$E(y X)$ (2)	$E(y X, y > 0)$ (3)
Migrant households migrating with children	-1.79*** (0.356)	-1.10*** (0.208)	-0.782*** (0.148)
Per household number of children in school	-0.235 (0.365)	-0.151 (0.235)	-0.108 (0.167)
Household head's age	-0.065*** (0.017)	-0.042*** (0.011)	-0.030*** (0.008)
Household head's gender (1=male; 0=female)	0.046 (0.265)	0.030 (0.170)	0.021 (0.121)
Having children enrolled in private schools (1=private school; 0 otherwise)	0.124 (0.460)	0.080 (0.299)	0.057 (0.213)
Per capita household income (ref : first quintile)			
Second quintile	1.04** (0.392)	0.647** (0.244)	0.459** (0.173)
Third quintile	1.03** (0.395)	0.641** (0.246)	0.454** (0.174)
Fourth quintile	0.716 (0.407)	0.438 (0.249)	0.311 (0.177)
Fifth quintile	1.52*** (0.429)	0.967*** (0.274)	0.686*** (0.195)
Household head's level of education (1 = high school and above; 0 otherwise)	1.14*** (0.284)	0.727*** (0.179)	0.515*** (0.127)
Household head's occupation (ref: Blue-sector occupation)			
Other occupation	0.374 (0.416)	0.245 (0.274)	0.174 (0.195)
White-collar occupation	-0.232 (0.339)	-0.147 (0.214)	-0.105 (0.153)
Service sector occupation	0.012 (0.328)	0.008 (0.211)	0.005 (0.150)
Region (ref: Central region)			
Coastal	0.652* (0.296)	0.418* (0.189)	0.297* (0.134)
Western	0.380 (0.343)	0.240 (0.218)	0.170 (0.155)
Constant	3.683*** (0.914)		
Observations	2427	2427	2427

Source of data: RUMiC data. MHS wave 2008 and UHS wave 2008. Notes: Expenditure is measured in RMB per year. Number of left-censored observations at  $\ln(\text{Private tutoring expenditure}) = 0$ : 1063. Number of uncensored observations: 1364. Standard errors are reported in parenthesis. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

Table 10: Tobit coefficients for household private tutoring expenditure

Dependent variable : Natural logarithm of sponsorship expenditure			
	Tobit (1)	$E(y X)$ (2)	$E(y X, y > 0)$ (3)
Migrant households migrating with children	5.49*** (0.908)	1.07*** (0.200)	1.18*** (0.205)
Per household number of children in school	0.950 (0.835)	0.161 (0.141)	0.192 (0.169)
Household head's age	-0.140** (0.045)	-0.024** (0.008)	-0.028** (0.009)
Household head's gender (1=male; 0=female)	2.03 (1.11)	0.382 (0.232)	0.430 (0.247)
Having children enrolled in private schools (1=private school; 0 otherwise)	0.124 (0.460)	0.080 (0.299)	0.057 (0.213)
Per capita household income (ref : first quintile)			
Second quintile	0.034 (1.014)	0.005 (0.163)	0.007 (0.201)
Third quintile	0.883 (1.01)	0.150 (0.172)	0.179 (0.204)
Fourth quintile	-0.013 (1.08)	-0.002 (0.173)	-0.003 (0.213)
Fifth quintile	1.32 (1.15)	0.231 (0.204)	0.271 (0.236)
Household head's level of education	-0.723 (0.762)	-0.123 (0.130)	-0.147 (0.155)
Household head's occupation (ref: Blue-sector occupation)			
Other occupation	1.32 (1.11)	0.242 (0.211)	0.277 (0.236)
White-collar occupation	-0.717 (0.954)	-0.115 (0.152)	-0.142 (0.188)
Service sector occupation	-0.030 (0.862)	-0.005 (0.145)	-0.006 (0.174)
Region (ref: Central region)			
Coastal	-2.95*** (0.807)	-0.474*** (0.131)	-0.585*** (0.160)
Western	0.694 (0.868)	0.141 (0.178)	0.152 (0.191)
Constant	-7.0** (2.43)		
Observations	2427	2427	2427

Source of data: RUMiC data. MHS wave 2008 and UHS wave 2008. Notes: Expenditure is measured in RMB per year. Number of left-censored observations at  $\ln(\text{Sponsorship expenditure}) = 0$ : 2035. Number of uncensored observations: 392. Standard errors are reported in parenthesis. \* p<0.1; \*\* p<0.05; \*\*\* p<0.01.

Table 11: Tobit coefficients for household sponsorship expenditure

Dependent variable : Natural logarithm of tuition expenditure			
	Tobit	$E(y X)$	$E(y X, y > 0)$
	(1)	(2)	(3)
Migrant households migrating with children	0.790*** (0.116)	0.787*** (0.112)	0.768*** (0.110)
Birth order of children	-0.207 (0.115)	-0.206 (0.119)	-0.20 (0.116)
Grade of children	0.127*** (0.005)	0.127*** (0.005)	0.123*** (0.005)
Children's gender (1=male; 0 =female)	0.127 (0.082)	0.127 (0.082)	0.123 (0.08)
Household head's gender (1=male; 0 =female)	-0.175 (0.105)	-0.175 (0.105)	-0.170 (0.102)
Having children enrolled in private schools (1=private school; 0 otherwise)	0.733*** (0.166)	0.731*** (0.159)	0.716*** (0.157)
Quality of school of children (ref: best in areas)			
Better than average	-0.243 (0.130)	-0.242 (0.127)	-0.236 (0.124)
Average	-0.284* (0.139)	-0.283* (0.135)	-0.276* (0.131)
Worse than average	-0.511 (0.530)	-0.509 (0.495)	-0.494 (0.478)
Per capita household income (ref : first quintile)			
Second quintile	-0.001 (0.141)	-0.001 (0.133)	-0.001 (0.129)
Third quintile	0.119 (0.132)	0.119 (0.135)	0.116 (0.132)
Fourth quintile	0.123 (0.149)	0.123 (0.143)	0.119 (0.139)
Fifth quintile	-0.174 (0.174)	-0.173 (0.151)	-0.168 (0.146)
Household head's level of education (1 = high school and above; 0 otherwise)	0.239* (0.105)	0.238* (0.010)	0.231* (0.09)
Household head's occupation (ref: Blue-sector occupation)			
White-collar occupation	0.092 (0.133)	0.092 (0.120)	0.090 (0.117)
Service sector occupation	0.079 (0.116)	0.0790 (0.112)	0.077 (0.109)
Other occupation	-0.029 (0.143)	-0.0290 (0.133)	-0.028 (0.130)
Region of destination (ref: Central region)			
Coastal	0.420*** (0.111)	0.418*** (0.102)	0.405*** (0.010)
Western	0.835*** (0.107)	0.831*** (0.119)	0.810*** (0.116)
Constant	4.536*** (0.238)		
Observations	2654	2654	2654

Source of data: RUMiC data. MHS wave 2008 and UHS wave 2008. Notes: Expenditure is measured in RMB per year. Number of left-censored observations at  $\ln(\text{Tuition}) = 0$ : 223. Number of uncensored observations: 2431. Standard errors are reported in parenthesis. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01.

Table 12: Tobit coefficients for tuition expenditure - individual level data  
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Dependent variable : Natural logarithm of private tutoring expenditure			
	Tobit	$E(y X)$	$E(y X, y > 0)$
	(1)	(2)	(3)
Migrant households migrating with children	-1.65*** (0.315)	-0.981*** (0.179)	-0.709*** (0.130)
Birth order of children	-1.912*** (0.355)	-1.173*** (0.217)	-0.852*** (0.158)
Grade of children	-0.189*** (0.015)	-0.116*** (0.009)	-0.0841*** (0.006)
Children's gender (1=male; 0=female)	-0.45** (0.225)	-0.29** (0.138)	-0.203** (0.100)
Household head's gender (1=male; 0=female)	-0.227 (0.251)	-0.140 (0.155)	-0.102 (0.113)
Having children enrolled in private schools (1=private school; 0 otherwise)	0.272 (0.439)	0.169 (0.276)	0.123 (0.200)
Quality of school of children (ref: best in areas)			
Better than average	-0.327 (0.346)	-0.208 (0.222)	-0.150 (0.161)
Average	-0.842* (0.369)	-0.521* (0.233)	-0.378* (0.169)
Worse than average	-3.128* (1.466)	-1.697** (0.657)	-1.249* (0.503)
Per capita household income (ref : first quintile)			
Second quintile	1.187** (0.374)	0.700** (0.220)	0.508** (0.159)
Third quintile	1.197** (0.379)	0.706** (0.222)	0.512** (0.161)
Fourth quintile	0.931* (0.401)	0.541* (0.232)	0.393* (0.169)
Fifth quintile	1.535*** (0.419)	0.923*** (0.252)	0.669*** (0.183)
Household head's level of education (1 = high school and above; 0 otherwise)	-0.400 (0.366)	-0.244 (0.222)	-0.177 (0.161)
Household head's occupation (ref: Blue-sector occupation)			
White-collar occupation	-0.255 (0.327)	-0.156 (0.201)	-0.114 (0.146)
Service sector occupation	-0.077 (0.310)	-0.048 (0.192)	-0.035 (0.140)
Other occupation	-0.400 (0.366)	-0.244 (0.222)	-0.177 (0.161)
Region of destination (ref: Central region)			
Coastal	0.867** (0.283)	0.530** (0.172)	0.384** (0.125)
Western	0.525 (0.329)	0.315 (0.199)	0.228 (0.144)
Constant	4.980*** (0.693)		
Observations	2654	2654	2654

Source of data: RUMiC data. MHS wave 2008 and UHS wave 2008. Notes: Expenditure is measured in RMB per year. Number of left-censored observations at  $\ln(\text{Private tutoring expenditure}) = 0$ : 1225. Number of uncensored observations: 1429. Standard errors are reported in parenthesis. \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

Table 13: Tobit coefficients for private tutoring expenditure - individual level data



Dependent variable : Natural logarithm of sponsorship expenditure			
	Tobit	$E(y X)$	$E(y X, y > 0)$
	(1)	(2)	(3)
Migrant households migrating with children	6.16*** (0.793)	1.22*** (0.178)	1.33*** (0.179)
Birth order of children	0.314 (0.733)	0.055 (0.129)	0.064 (0.149)
Grade of children	-0.396*** (0.048)	-0.069*** (0.009)	-0.081*** (0.010)
Children's gender (1=male; 0=female)	0.592 (0.573)	0.103 (0.10)	0.120 (0.116)
Household head's gender (1=male; 0=female)	0.573 (0.658)	0.099 (0.112)	0.116 (0.132)
Having children enrolling in private schools (1=private school; 0 otherwise)	0.884 (1.033)	0.162 (0.199)	0.184 (0.219)
Quality of school of children (ref: best in areas)			
Better than average	-2.41** (0.921)	-0.483* (0.201)	-0.521* (0.207)
Average	-2.70** (0.971)	-0.531* (0.208)	-0.579** (0.216)
Worse than average	-3.06 (3.016)	-0.589 (0.493)	-0.649 (0.594)
Per capita household income (ref : first quintile)			
Second quintile	0.267 (0.905)	0.045 (0.152)	0.053 (0.180)
Third quintile	0.922 (0.927)	0.161 (0.162)	0.187 (0.188)
Fourth quintile	0.039 (1.02)	0.006 (0.168)	0.008 (0.201)
Fifth quintile	1.354 (1.074)	0.244 (0.196)	0.278 (0.222)
Household head's level of education (1 = high school and above; 0 otherwise)	-0.732 (0.704)	-0.128 (0.123)	-0.149 (0.143)
Household head's occupation (ref: Blue-sector occupation)			
White-collar occupation	-0.497 (0.895)	-0.085 (0.153)	-0.100 (0.180)
Service sector occupation	0.045 (0.786)	0.008 (0.140)	0.009 (0.161)
Other occupation	-0.149 (0.970)	-0.026 (0.170)	-0.030 (0.197)
Region of destination (ref: Central region)			
Coastal	-2.231** (0.736)	-0.376** (0.124)	-0.447** (0.147)
Western	0.472 (0.807)	0.095 (0.163)	0.102 (0.175)
Constant	-6.05*** (1.717)		
Observations	2654	2654	2654

Source of data: RUMiC data. MHS wave 2008 and UHS wave 2008. Notes: Expenditure is measured in RMB per year. Number of left-censored observations at  $\ln(\text{Sponsorship expenditure}) = 0$ : 2211. Number of uncensored observations: 443. Standard errors are reported in parenthesis. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01.

Table 14: Tobit coefficients for sponsorship expenditure - individual level data

Dependent variable : Natural logarithm of tuition expenditure			
	Tobit	$E(y X)$	$E(y X, y > 0)$
	(1)	(2)	(3)
Migrant households migrating with children	0.848*** (0.139)	0.844*** (0.138)	0.821*** (0.135)
Per household number of children in school	0.451** (0.154)	0.449** (0.153)	0.433** (0.148)
Household head's age	0.0778*** (0.007)	0.076*** (0.007)	0.074*** (0.006)
Household head's gender (1=male; 0=female)	-0.467*** (0.110)	-0.464*** (0.110)	-0.449*** (0.106)
Having children enrolling in private schools (1=private school; 0 otherwise)	0.717*** (0.191)	0.714*** (0.190)	0.695*** (0.187)
Per capita household income (ref : first quintile)			
Second quintile	0.025 (0.155)	0.025 (0.154)	0.024 (0.149)
Third quintile	0.206 (0.171)	0.205 (0.170)	0.198 (0.164)
Fourth quintile	0.353* (0.170)	0.351* (0.169)	0.340* (0.164)
Fifth quintile	-0.014 (0.180)	-0.014 (0.179)	-0.013 (0.172)
Household head's level of education (1 = high school and above; 0 otherwise)	0.217 (0.117)	0.216 (0.116)	0.208 (0.112)
Household head's occupation (ref: Blue-sector occupation)			
White-collar occupation	0.128 (0.140)	0.127 (0.139)	0.123 (0.135)
Service sector occupation	0.027 (0.137)	0.027 (0.136)	0.026 (0.132)
Other occupation	-1.01*** (0.171)	-0.996*** (0.168)	-0.949*** (0.159)
Region of destination (ref: Central region)			
Coastal	0.492*** (0.122)	0.489*** (0.121)	0.470*** (0.116)
West	0.910*** (0.144)	0.905*** (0.143)	0.875*** (0.139)
Constant	1.92*** (0.379)		
Observations	2268	2268	2268

Source of data: RUMiC data. MHS wave 2008 and UHS wave 2008. Notes: Expenditure is measured in RMB per year. Number of left-censored observations at ln(Tuition) =0: 187. Number of uncensored observations: 2081. Standard errors are reported in parenthesis. \* p<0.1; \*\* p<0.05; \*\*\* p<0.01.

Table 15: Tobit coefficients for tuition expenditure - only include migrant households with rural hukou

Dependent variable : Natural logarithm of private tutoring expenditure			
	Tobit (1)	$E(y X)$ (2)	$E(y X, y > 0)$ (3)
Migrant households migrating with children	-2.02*** (0.386)	-1.24*** (0.220)	-0.881*** (0.158)
Per household number of children in school	0.147 (0.389)	0.096 (0.254)	0.068 (0.180)
Household head's age	-0.065*** (0.017)	-0.042*** (0.011)	-0.03*** (0.008)
Household head's gender (1=male; 0=female)	0.121 (0.272)	0.078 (0.177)	0.056 (0.126)
Having children enrolled in private schools (1=private school; 0 otherwise)	0.254 (0.472)	0.167 (0.315)	0.119 (0.224)
Per capita household income (ref : first quintile)			
Second quintile	1.10** (0.391)	0.687** (0.243)	0.487** (0.172)
Third quintile	1.03* (0.426)	0.643* (0.266)	0.456* (0.189)
Fourth quintile	0.999* (0.427)	0.624* (0.265)	0.442* (0.188)
Fifth quintile	1.53*** (0.447)	0.985*** (0.287)	0.698*** (0.203)
Household head's level of education (1 = high school and above; 0 otherwise)	1.25*** (0.291)	0.802*** (0.185)	0.568*** (0.131)
Household head's occupation (ref: Blue-sector occupation)			
White-collar occupation	-0.192 (0.342)	-0.123 (0.219)	-0.0875 (0.156)
Service sector occupation	0.067 (0.339)	0.043 (0.221)	0.031 (0.157)
Other occupation	0.502 (0.423)	0.334 (0.283)	0.238 (0.202)
Region of destination (ref: Central region)			
Coastal	0.679* (0.302)	0.440* (0.195)	0.312* (0.138)
West	0.457 (0.358)	0.293 (0.231)	0.208 (0.164)
Constant	3.00** (0.940)		
Observations	2268	2268	2268

Source of data: RUMiC data. MHS wave 2008 and UHS wave 2008. Notes: Expenditure is measured in RMB per year. Number of left-censored observations at  $\ln(\text{Private tutoring}) = 0$ : 978. Number of uncensored observations: 1290. Standard errors are reported in parenthesis. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

Table 16: Tobit coefficients for private tutoring - only include migrant households with rural hukou

Dependent variable : Natural logarithm of sponsorship expenditure			
	Tobit	$E(y X)$	$E(y X, y > 0)$
	(1)	(2)	(3)
Migrant households migrating with children	6.13*** (1.03)	1.15*** (0.235)	1.30*** (0.237)
Per household number of children in school	1.01 (0.965)	0.156 (0.149)	0.197 (0.188)
Household head's age	-0.133** (0.049)	-0.021** (0.008)	-0.026** (0.009)
Household head's gender (1=male; 0=female)	0.846 (0.795)	0.128 (0.119)	0.164 (0.153)
Having children enrolled in private schools (1=private school; 0 otherwise)	1.74 (1.23)	0.293 (0.227)	0.352 (0.259)
Per capita household income (ref : first quintile)			
Second quintile	-0.048 (1.09)	-0.007 (0.149)	-0.009 (0.202)
Third quintile	2.22 (1.19)	0.354 (0.192)	0.438 (0.235)
Fourth quintile	0.594 (1.21)	0.085 (0.175)	0.112 (0.230)
Fifth quintile	2.07 (1.28)	0.327 (0.206)	0.407 (0.253)
Household head's level of education (1 = high school and above; 0 otherwise)	-0.546 (0.837)	-0.085 (0.130)	-0.107 (0.164)
Household head's occupation (ref: Blue-sector occupation)			
White-collar occupation	-0.917 (1.02)	-0.136 (0.150)	-0.176 (0.196)
Service sector occupation	-0.540 (0.961)	-0.082 (0.145)	-0.105 (0.186)
Other occupation	1.48 (1.20)	0.256 (0.215)	0.302 (0.248)
Region of destination (ref: Central region)			
Coastal	-3.24*** (0.878)	-0.481*** (0.134)	-0.624*** (0.170)
West	0.805 (0.978)	0.154 (0.189)	0.172 (0.210)
Constant	3.00** (0.940)		
Observations	2268	2268	2268

Source of data: RUMiC data. MHS wave 2008 and UHS wave 2008. Notes: Expenditure is measured in RMB per year. Number of left-censored observations at ln(Sponsorship) = 0: 1933. Number of uncensored observations: 335. Standard errors are reported in parenthesis. \* p<0.1; \*\* p<0.05; \*\*\* p<0.01.

Table 17: Tobit coefficients for sponsorship expenditure - only include migrant households with rural hukou

Dependent variable : Natural logarithm of tuition expenditure			
	Tobit (1)	$E(y X)$ (2)	$E(y X, y > 0)$ (3)
Migrant households migrating with children	0.976*** (0.164)	0.966*** (0.163)	0.920*** (0.156)
Per Number of children in school	0.831*** (0.132)	0.821*** (0.130)	0.775*** (0.122)
Household head's age	0.016 (0.008)	0.015 (0.008)	0.015 (0.007)
Household head's gender (1=male; 0=female)	-0.295* (0.128)	-0.292* (0.127)	-0.276* (0.120)
Having children enrolling in private schools (1=private school; 0 otherwise)	0.873*** (0.205)	0.866*** (0.204)	0.829*** (0.198)
Per capita household income (ref : first quintile)			
Second quintile	-0.163 (0.185)	-0.161 (0.183)	-0.152 (0.173)
Third quintile	-0.031 (0.190)	-0.030 (0.188)	-0.029 (0.178)
Fourth quintile	-0.036 (0.197)	-0.036 (0.194)	-0.034 (0.184)
Fifth quintile	-0.321 (0.215)	-0.317 (0.212)	-0.299 (0.200)
Household head's level of education (1 = high school and above; 0 otherwise)	0.330* (0.139)	0.326* (0.137)	0.307* (0.129)
Household head's occupation (ref: Blue-sector occupation)			
White-collar occupation	-0.025 (0.171)	-0.025 (0.169)	-0.023 (0.160)
Service sector occupation	-0.037 (0.156)	-0.036 (0.155)	-0.034 (0.146)
Other occupation	-0.348 (0.205)	-0.343 (0.202)	-0.323 (0.189)
Region of destination (ref: Central region)			
Coastal	0.401** (0.144)	0.395** (0.142)	0.370** (0.133)
Western	1.22*** (0.163)	1.21*** (0.162)	1.15*** (0.155)
Constant	3.22*** (0.422)		
Observations	1639	1639	1639

Source of data: RUMiC data. MHS wave 2008 and UHS wave 2008. Notes: Expenditure is measured in RMB per year. Number of left-censored observations at  $\ln(\text{Tuition}) = 0$ : 176. Number of uncensored observations: 1463. Standard errors are reported in parenthesis. \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

Table 18: Tobit coefficients for tuition expenditure - only include households with children in compulsory education

Dependent variable : Natural logarithm of private tutoring expenditure			
	Tobit (1)	$E(y X)$ (2)	$E(y X, y > 0)$ (3)
Migrant households migrating with children	-1.75*** (0.366)	-1.22*** (0.248)	-0.871*** (0.176)
Per household number of children in school	-0.359 (0.300)	-0.256 (0.214)	-0.185 (0.155)
Household head's age	-0.003 (0.018)	-0.002 (0.013)	-0.001 (0.009)
Household head's gender (1=male; 0 otherwise)	-0.557* (0.282)	-0.401 (0.205)	-0.291 (0.149)
Having children enrolling in private schools (1=private school; 0 otherwise)	-0.192 (0.461)	-0.136 (0.324)	-0.098 (0.234)
Per capita household income (ref : first quintile)			
Second quintile	1.01* (0.418)	0.685* (0.282)	0.490* (0.202)
Third quintile	1.53*** (0.426)	1.06*** (0.294)	0.763*** (0.211)
Fourth quintile	1.35** (0.441)	0.929** (0.303)	0.666** (0.217)
Fifth quintile	1.35** (0.479)	0.929** (0.331)	0.667** (0.237)
Household head's level of education (1 = high school and above; 0 otherwise)	1.05*** (0.307)	0.746*** (0.219)	0.537*** (0.157)
Household head's occupation (ref: Blue-sector occupation)			
White-collar occupation	-0.154 (0.371)	-0.112 (0.269)	-0.0812 (0.195)
Service sector occupation	-0.277 (0.346)	-0.199 (0.249)	-0.145 (0.181)
Other occupation	-0.716 (0.453)	-0.505 (0.316)	-0.365 (0.228)
Region of destination (ref: Central region)			
Coastal	0.695* (0.318)	0.496* (0.227)	0.358* (0.164)
West	0.324 (0.363)	0.227 (0.255)	0.164 (0.184)
Constant	2.66** (0.938)		
Observations	1639	1639	1639

Source of data: RUMiC data. MHS wave 2008 and UHS wave 2008. Notes: Expenditure is measured in RMB per year. Number of left-censored observations at  $\ln(\text{Private tutoring}) = 0$ : 628. Number of uncensored observations: 1011. Standard errors are reported in parenthesis. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

Table 19: Tobit coefficients for private tutoring expenditure - only include households with children in compulsory education

Dependent variable : Natural logarithm of sponsorship expenditure			
	Tobit	$E(y X)$	$E(y X, y > 0)$
	(1)	(2)	(3)
Migrant households migrating with children	6.51*** (0.904)	1.69*** (0.262)	1.60*** (0.233)
Per household number of children in school	1.48* (0.652)	0.347* (0.153)	0.346* (0.153)
Household head's age	-0.046 (0.046)	-0.011 (0.011)	-0.011 (0.011)
Household head's gender (1=male; 0=female)	0.098 (0.709)	0.023 (0.166)	0.023 (0.166)
Having children enrolled in private schools (1=private school; 0 otherwise)	1.22 (1.03)	0.305 (0.271)	0.295 (0.256)
Per capita household income (ref : first quintile)			
Second quintile	0.675 (0.971)	0.155 (0.223)	0.157 (0.225)
Third quintile	0.998 (1.02)	0.235 (0.238)	0.234 (0.238)
Fourth quintile	-0.282 (1.08)	-0.061 (0.234)	-0.064 (0.244)
Fifth quintile	1.18 (1.19)	0.280 (0.286)	0.279 (0.282)
Household head's level of education (1 = high school and above; 0 otherwise)	-0.180 (0.766)	-0.042 (0.179)	-0.042 (0.179)
Household head's occupation (ref: Blue-sector workers)			
White-collar occupation	-1.39 (1.00)	-0.306 (0.216)	-0.316 (0.225)
Service sector occupation	0.104 (0.838)	0.025 (0.203)	0.025 (0.200)
Other occupation	-0.047 (1.13)	-0.011 (0.271)	-0.011 (0.268)
Region of destination (ref: Central region)			
Coastal	-1.97* (0.802)	-0.439* (0.178)	-0.451* (0.183)
Western	1.04 (0.866)	0.280 (0.238)	0.262 (0.220)
Constant	-9.11** (2.39)		
Observations	1639	1639	1639

Source of data: RUMiC data. MHS wave 2008 and UHS wave 2008. Notes: Expenditure is measured in RMB per year. Number of left-censored observations at ln(Sponsorship) = 0: 1277. Number of uncensored observations: 362. Standard errors are reported in parenthesis. \* p<0.1; \*\* p<0.05; \*\*\* p<0.01.

Table 20: Tobit coefficients for sponsorship expenditure - only include households with children in compulsory education

Dependent variable : Natural logarithm of tuition expenditure share			
	Tobit	$E(y X)$	$E(y X, y > 0)$
	(1)	(2)	(3)
Migrant households migrating with children	0.040*** (0.005)	0.03*** (0.004)	0.022*** (0.003)
Per household number of children in school	0.016** (0.006)	0.012** (0.004)	0.008** (0.003)
Household head's age	0.003*** (0.000)	0.002*** (0.000)	0.002*** (0.000)
Household head's gender (1=male; 0=female)	-0.014*** (0.004)	-0.011*** (0.003)	0.013*** (0.002)
Having children enrolled in private schools (1=private school; 0 otherwise)	0.023*** (0.007)	0.017*** (0.006)	-0.008*** (0.002)
Per capita household income (ref : first quintile)			
Second quintile	0.0004 (0.006)	0.0003 (0.005)	0.0002 (0.003)
Third quintile	-0.006 (0.006)	-0.004 (0.005)	-0.003 (0.003)
Fourth quintile	-0.003 (0.006)	-0.002 (0.005)	-0.002 (0.003)
Fifth quintile	-0.020** (0.007)	-0.015** (0.004)	-0.011** (0.003)
Household head's level of education	0.001 (0.004)	0.001 (0.003)	0.001 (0.002)
Household head's occupation (ref: Blue-sector occupation)			
White-collar occupation	-0.002 (0.005)	-0.002 (0.004)	-0.001 (0.003)
Service sector workers	-0.011* (0.005)	-0.008* (0.004)	-0.006* (0.003)
Other occupation	-0.046*** (0.006)	-0.032*** (0.004)	-0.023*** (0.003)
Region of destination (ref: Central region)			
Coastal	0.010* (0.005)	0.007* (0.004)	0.005* (0.002)
Western	0.014** (0.005)	0.01** (0.004)	0.008** (0.002)
Constant	-0.091*** (0.014)		
Observations	2383	2383	2383

Source of data: RUMiC data. MHS wave 2008 and UHS wave 2008. Notes: Expenditure is measured in RMB per year. Number of left-censored observations at  $\ln(\text{tuition}) = 0$ : 194. Number of uncensored observations: 2189. Standard errors are reported in parenthesis. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01.

Table 21: Tobit coefficients for the budget share spent on tuition



Dependent variable : Natural logarithm of private tutoring share			
	Tobit (1)	$E(y X)$ (2)	$E(y X, y > 0)$ (3)
Migrant households migrating with children	-0.024*** (0.005)	-0.012*** (0.002)	-0.009*** (0.002)
Per household number of children in school	-0.004 (0.005)	-0.002 (0.002)	-0.002 (0.002)
Household head's age	-0.000* (0.000)	-0.000* (0.000)	-0.000* (0.000)
Household head's gender (1=male; 0=female)	-0.006 (0.006)	-0.001 (0.002)	-0.001 (0.001)
Having children enrolled in private schools (1=private school; 0 otherwise)	-0.002 (0.003)	-0.003 (0.002)	-0.002 (0.002)
Per capita household income (ref : first quintile)			
Second quintile	0.009 (0.005)	0.005 (0.003)	0.003 (0.002)
Third quintile	0.004 (0.005)	0.002 (0.003)	0.001 (0.002)
Fourth quintile	-0.001 (0.005)	-0.001 (0.003)	-0.000 (0.002)
Fifth quintile	0.002 (0.005)	0.001 (0.003)	0.001 (0.002)
Household head's level of education	0.015*** (0.004)	0.008*** (0.002)	0.006*** (0.001)
Household head's occupation (ref: Blue-sector occupation)			
Other occupation	-0.003 (0.005)	-0.001 (0.003)	-0.001 (0.002)
White-collar occupation	-0.007 (0.004)	-0.004 (0.002)	-0.003 (0.002)
Service sector occupation	0.000 (0.004)	0.000 (0.002)	0.000 (0.002)
Region of destination (ref: Central region)			
Coastal	0.005 (0.004)	0.003 (0.002)	0.002 (0.001)
Western	-0.001 (0.004)	-0.000 (0.002)	-0.000 (0.002)
Constant	0.023* (0.012)		
Observations	2383	2383	2383

Source of data: RUMiC data. MHS wave 2008 and UHS wave 2008. Notes: Expenditure is measured in RMB per year. Number of left-censored observations at  $\ln(\text{Private tutoring expenditure}) = 0$ : 1034. Number of uncensored observations: 1349. Standard errors are reported in parenthesis. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01.

Table 22: Tobit coefficients for the budget share spent on private tutoring

Dependent variable : Natural logarithm of sponsorship share			
	Tobit (1)	$E(y X)$ (2)	$E(y X, y > 0)$ (3)
Migrant households migrating with children	0.069*** (0.013)	0.012*** (0.003)	0.014*** (0.003)
Per household number of school-aged children	0.028* (0.012)	0.004* (0.002)	0.006* (0.002)
Household head's age	-0.002** (0.001)	-0.000** (0.000)	-0.000** (0.000)
Household head's gender (1=male; 0 otherwise)	0.011 (0.011)	0.002 (0.002)	0.002 (0.002)
Having children enrolled in private schools (1=private school; 0 otherwise)	0.028 (0.016)	0.005 (0.003)	0.006 (0.004)
Per capita household income (ref : first quintile)			
Second quintile	0.011 (0.015)	0.002 (0.002)	0.002 (0.003)
Third quintile	0.016 (0.015)	0.003 (0.002)	0.003 (0.003)
Fourth quintile	-0.003 (0.016)	-0.001 (0.002)	-0.001 (0.003)
Fifth quintile	0.011 (0.017)	0.002 (0.003)	0.002 (0.003)
Household head's level of education	-0.013 (0.011)	-0.002 (0.002)	-0.003 (0.002)
Household head's occupation (ref: Blue-sector occupation)			
Other occupation	0.023 (0.016)	0.004 (0.003)	0.005 (0.003)
White-collar occupation	-0.005 (0.014)	-0.001 (0.002)	-0.001 (0.003)
Service sector occupation	0.006 (0.013)	0.001 (0.002)	0.001 (0.002)
Region of destination (ref: Central region)			
Coastal	-0.045*** (0.012)	-0.007*** (0.002)	-0.009*** (0.002)
Western	0.002 (0.013)	0.000 (0.002)	0.000 (0.003)
Constant	-0.128*** (0.036)		
Observations	2383	2383	2383

Source of data: RUMiC data. MHS wave 2008 and UHS wave 2008. Notes: Expenditure is measured in RMB per year. Number of left-censored observations at  $\ln(\text{sponsorship}) = 0$ : 1992. Number of uncensored observations: 391. Standard errors are reported in parenthesis. \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

Table 23: Tobit coefficients for the budget share spent on sponsorship