# UNRAVELING THE SUPPLY SIDE DYNAMICS OF HOME TUTORING

# An Informal Job Market in Bangladesh

By

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# **AUTHOR'S DECLARATION**

I hereby declare that this thesis is the result of original research. It contains no materials accepted for any other degree in any other institution and no materials previously written and/or published by another individual, except where appropriate acknowledgement is made in the form of bibliographical references.

I further declare that the following word count for this thesis are accurate: Body of thesis (all chapters excluding table of contents, abstract, annexes, references etc.): 8126

Entire manuscript: 10,603

Signed: Tansum Tanha

# ABSTRACT

The study discusses the labor supply dynamics of home tutoring in Bangladesh, assessing home tutors' wage perception and labor supply elasticity. The aim is to find out the dynamics of labor supply in this sector, the existing inequalities and differences, and understand the underlying mechanisms behind them. Since this is an informal job market, there is no wage transparency. With such information asymmetry, people have different perceptions on what wage and working days to settle down for and certain groups of people end up bargaining for far less. There are also possibilities of different groups of people having different wage responsiveness and labor supply elasticity that can create or widen the wage discrimination. As such, the findings of this study suggest that female home tutors have higher wage responsiveness and labor supply elasticity than male home tutors. Female home tutors also have lower wage expectation as well as lower monthly income than male tutors. This research explores the supply side dynamics of home tutors that can arise due to differences in wage responsiveness and labor supply elasticity, and recommend policies to make the field more fair to all home tutors.

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# **CHAPTER 1: INTRODUCTION**

# 1.1 Background

In many economic policy evaluations, the elasticity of the labor supply regarding the rate of pay is crucial. This study looks at the labor supply elasticity and wage responsiveness among different groups of people in home tutoring, which is an informal labor market in Bangladesh. Home tutoring can be categorized as a kind of private tutoring where students are tutored privately on their academic studies.

Private tutoring helps students review what they have already learned or get a sneak peek at what they will learn in school. The two are closely related in terms of content. For their children to "catch up, keep up, or get ahead of their peers," parents pay for various forms of private tutoring, whether individual or group-based (Bray et al., 2014). Private tutoring, which coexists with the formal educational system, is viewed as an alternate route by parents looking to improve their children's scholastic chances. Some East Asian cultures, including Japan and Korea, are well recognized for their long histories of valuing private tutoring to get ready for the competitive entrance exams for higher-level educational institutions that are based on merit and have high stakes (Baker et al., 2001; Baker and LeTendre, 2005). A prominent form of private tutoring is - home tuition that refers to the situation in which a tutor visits the students' house and teaches the students specific subjects. In most cases, home tutors help students with academic problems. This has existed across many cultures and countries. In Bangladesh, home tutoring has been existing parallel to the formal education system for a very long time. Even though this shadow education system has not been formalized and there are no policies to address the needs and problems in this sector, home tutoring still exists because the formal education system in the country cannot meet the educational demands of students and households.

According to World Bank data, Bangladesh has declining government investment in education.



Figure 1: Government Expenditure on Education, total (as % of government expenditure) Source: World Bank Data

The declining trend of educational investment can be a good reason behind the existence of such a large informal shadow education supply sector (Figure 1). Another reason can be the pupil teacher ratio.



Figure 2: Pupil teacher ratio, primary school

### Source: World Bank Data

Based on data collected from World Development Indicators and as seen in Figure 2, as of 2019, there is 1 teacher for 23 students in primary schools in Bangladesh. These figures help explain the context of this paper and Bangladesh's practice of home tuition and why the practice exists at such large scale. With the rising competition among students to achieve higher grades as well as the overpopulated classrooms that make understanding different subjects difficult for many students, families either send their children to private coaching centers, which are formally registered and they run formally, or in many cases they privately hire home tutors who visit the students' house and teach them before or after school hours. The latter case falls into an informal job sector which has its pros and cons. Majority of these home tutors are university going students who are either in their bachelors or master's studies or graduates who just finished their degrees. These are the tutors visiting primary or secondary school going students' houses and tutoring them in different subjects.

## **1.2 Research Questions and Thesis Statement**

According to World Bank data, the female labor force participation rate in Bangladesh is 39.7% and the rest is held by men. Along with many other factors, the less economic involvement compared to men can have consequences on their wage responsiveness than men. Hence this study looks at the differences in wage responsiveness between men and women in this sector.

This study investigates the following research questions:

- Are female home tutors more wage responsive than male home tutors in Bangladesh?
   In other words, is labor supply of female home more elastic than male home tutors? If yes, why?
- 2. Does wage responsiveness among male and female vary across different cities, academic background and structure of university? Why do they vary?
- 3. What can be some policy options to suit the differences in labor supply elasticity?

The study finds that after controlling for age, type of university, field of study and location of tutoring; female home tutors have higher wage responsiveness than male home tutors and this can be due to female home tutors' lower wage expectation, lower monthly earning and low tendency of participating in formal jobs compared to male home tutors

# **1.3 Significance of the Study**

This paper contributes to literature in many ways. To the best of the author's knowledge, no previous literature or study has been conducted on the supply side dynamics of home tutoring in Bangladesh. The existing literature looks at the demand side of it and looks at how private and home tutoring impact students' academic achievement and issues around it. It discusses the underlying inequalities in the supply side of this economy, why and when people stop

engaging in this job sector. The paper also contributes to the growing literature on gender-based wage discrimination in developing countries as well as in informal economies.

The study is conducted gathering primary data by surveying 466 participants. First, it looks at the monthly earnings of different groups of people home tutoring in the country. Then it also looks at the differences in wage responsiveness, labor supply elasticity, and expected earnings among these groups, particularly between male and female home tutors. The groups are differentiated based on their university type, academic background, location of tutoring and most importantly – for this paper, gender.

The study explores the differences in wage responsiveness and labor supply elasticity because the recipients of this informal labor supply may use gender-specific variations in labor supply elasticities to their advantage by practicing wage discrimination while paying women and men. There could be different underlying mechanisms related to the home tutors' negotiation skills and labor force participation in formal and informal economy. Hence it is crucial to study this topic and comprehend the differences in wage responsiveness and labor supply elasticity for male and female home tutors. This in turn may be one reason why this study's findings indicate that the gender wage disparity is another stylized reality of home tutoring. In this way, the study also contributes to the gap in the literature on gender pay gap as well as differences in wage expectations among men and women in home tutoring market of Bangladesh. The study also contributes to the existing literature on home tutoring market by exploring the labor supply elasticity of home tutors from different types of universities, field of studies, and tutoring locations in the country.

# 1.4 Organization of the Paper

The rest of the paper proceeds as follows; Chapter 2 gives review of literature, previous study and theoretical aspects of home tutoring, informal job market, labor supply elasticities and possible reasons for women having higher labor supply elasticity. Chapter 3 describes the methodology, how the data was collected for this study, the survey questionnaire and sample size. This chapter also discusses the regression models that were run, their results and analysis of the findings for different groups of respondents. Chapter 4 discusses the underlying mechanisms of the key findings and emphasizes the need for policies to address the issues. Chapter 5 recommends policies and evaluates the recommended policies highlighting the pros and cons for each policy approach. Finally, Chapter 6 concludes the study and Chapter 7 mentions the limitations this study faced and directions for future research. In the end, the paper includes the Annexes and list of works cited as References.

# **CHAPTER 2: LITERATURE REVIEW**

The literature conducted on this informal economy primarily looks at the demand side of this labor market and the impact of home tutoring on students' educational progress. Hence, there is a gap in literature on understanding the dynamics of labor supply in this market. To start studying this field, we need to understand who the home tutors are. A study by Mahmud and Kenayatullah (2017), shows that in case of seeking tutors for English subjects, 44.7% students in metropolitan regions of Bangladesh opted for individual or one-to-one tutoring. Parents primarily employed the tutors at their homes in this tutoring. According to this study, 31.3% of students had a senior or university student tutor them. Many senior or university students in the metropolitan areas in this study stated that they engage in home tutoring to have a source of income so they could take care of their own educational costs or make extra money. This gives us a picture of the supply and demand of home tutoring services in the country, that most of these home tutors are likely to be university students. Hence, the survey forms were distributed among university students in the country for this study.

It can be assumed that home tutors would have good responsiveness to wage changes because of the flexibility and lack of barriers this informal job sector offers. However, it would be interesting to look at the differences in wage responsiveness and labor supply elasticity across different genders. While majority of the studies show women being more labor supply elastic than men, some literature findings indicate women being less labor elastic than men. In addition to their preferences, their labor supply elasticity also depends on the type of job and the structure of labor market. Hence it is possible for it to differ across different labor markets and cultures. Various reasons can influence gender-based wage responsiveness and labor supply elasticities. One key reason for women's higher labor supply elasticity could be women's higher participation in part time and informal jobs than men. The decomposition of the effect of a wage increment into a substitution and an income effect at the individual's level, where the individual derives utility from leisure and spending, is presented by Cahuc and Zylberberg (2004) in their book on Labor Economics. According to it, the labor supply elasticity is determined by the overall impact on leisure. Men often work full-time, so extending their hours because of salary adjustments won't produce significant income improvements. As a result, it is frequently discovered that men's wage responsiveness and labor elasticities are very low. When the income effect causes a significant increase in leisure time, men's own wage elasticities may also be negative. Women frequently work part-time and tend to have lower participation rates in formal full-time economy than men, so when they work more hours, their income can rise considerably more quickly.

Indeed, in Bangladesh compared to men, we see higher female labor force participation in informal sector and lower female labor force participation in formal job sectors. Rahman and Islam (2013) discuss the distribution of the employed labor force in Bangladesh among male and females in formal and informal job sectors.

		-		
Year	Male	Female	All	
2010	51	35	46	
2006	52	26	46	
Source: years).	BBS,	LFS (va	(various	

Table 1: Average working hours/week in formal sector Source: BBS, LFS

Year		Ma	ale	Female	
		Number ('000s)	Share (%)	Number ('000s)	Share (%)
2000	Formal	8420	27.1	1230	15.6
	Informal	22669	78.9	6660	84.4
2006	Formal	8594	23.8	1614	14.3
	Informal	27486	76.2	9663	85.7
2010	Formal	5542	14.6	1244	7.7
	Informal	32391	85.5	14959	92.3
Source: F	BBS LES (various	veore)			

Table 2: Formal vs. informal employment among Male and Female in Bangladesh

Source: BBS, LFS

In Table 2, we can see that the share of female participation in the formal economy in 2000 was 15.6% for women which is far less than the 27.1% share held by men. In contrast the share is higher for women in the informal economy (84.4%) compared to men's participation in informal economy (78.9%). The differences remain prominent even in 2010 when we see female labor force participation in the informal sector rises to 92.3% which remains higher than men which is 85.5%. From table 1, we can comment that women work less in the formal sector and in table 2 we see that female participation is higher in the informal sector. This can explain higher wage responsiveness and labor supply elasticity among women in the informal sector such as in home tutoring, where women working more hours can bring significant changes in their income quickly.

The reason we care to understand and assess these differences is to ensure that women are not exploited in this sector. There can be an economic motivation for families with market power to discriminate against women's wages in this informal sector. By choosing to negotiate with home tutors, families may contribute to these discrepancies. If so, previous research has shown that women are less inclined to negotiate and frequently ask for less than men (Babcock, Linda & Laschever, 2009).

The situation of female employment in Bangladesh can also be influenced by caring obligations; the more time women spend providing unpaid care, the more likely it is that they would work part-time or in vulnerable positions. Women are more likely to work part-time and in vulnerable jobs in countries like Bangladesh where women conduct more unpaid care work and domestic household chores than males do. Unpaid caregiving is a time- and energy-intensive job that can prevent women in Bangladesh from entering the workforce, forcing them into informal or part time jobs with short working hours. Jasmine and Nduna (2022) reviews literature on parenting and caregiving responsibilities in Bangladesh from 2006 to 2018 and it was found that women work long hours and contribute significantly to the household economy in both rural and urban areas. Based on their collection of literature review - in most studies, the term "mother" was used synonymously with parent, with mothers being viewed as the primary caregiver. Gendered notions that women are the major caregivers are supported by research on parenting in Bangladesh. This caregiving role also involves taking care of the elderly and other family members.

With the responsibilities of unpaid caregiving and domestic household works, women in Bangladesh tend to choose working in informal sectors or part time positions. Because compared to the formal workplace, the informal job market often offers more flexible pay. Additionally, in contrast to formal contracts or collective bargaining agreements, individual workers' and employers' bargaining power frequently determines pay in the informal economy. Since workers and employers may negotiate salaries on a case-by-case basis, wages can be adapted to changes in labor supply and labor demand. Biasi and Sarson (2020) conduct a study in Wisconsin, where a 2011 reform permitted school districts to set teachers' compensation more flexibly and engage in one-to-one negotiations, they examine the salaries of public-school teachers. Their study demonstrates that flexible pay increased the gender pay gap among teachers with the same credentials. According to their survey results, women are less likely to negotiate for payment than men, especially when the counterpart is a man, which has contributed to the wage difference. The study ensures that this discrepancy is not caused by variations in employment mobility or competence between both genders, and by a greater demand for male teachers in that region. In this way, women could be exploited in this job market. Hence, it is important to assess if women tend to respond more to wage changes and if, in reality, they are getting paid less than men in home tutoring.

# **CHAPTER 3: METHODOLOGY**

# 3.1 Data Collection and Survey Methods

An online survey form has been distributed among university students through university admins, professors, teaching assistants and university club members. Facebook groups work as one of the major platforms for home tutors to find jobs as each region in the country has formed Facebook tuition circulation groups of their own. The survey form link has also been distributed among these groups in order to capture the home tutors who already graduated from universities but are still home tutoring or have tutored recently. The starting date for survey distribution was March 10, 2023, and responses have been collected till April 16, 2023. The targeted participants were university going and recently graduated students who are currently home tutoring or have home tutored recently. The starting 1.

Among 466 participants, 234 were female and 231 were male. 1 respondent chose "others" as gender which was not counted while interpreting the results as it would be unrepresentative to comment on the whole population based on 1 response. 227 home tutors are currently studying or graduated from private universities or colleges, 235 are studying or graduated from public/national universities or colleges. 152 respondents come from social sciences backgrounds, 261 respondents are from natural sciences, and 45 respondents are from arts and humanities backgrounds. 296 respondents in this survey are currently home tutoring and 170 respondents are not currently home tutoring but have tutored recently.

Questions were asked to find out why 170 respondents are not working in this sector anymore, 111(all genders) respondents replied it's because they have a formal job now, 32 (all female) replied it is due to unhealthy and unsafe working conditions. 38 female respondents replied that

they stopped working in this sector because they found a formal job. 73 male respondents reported that they stopped working in this sector because they found a formal job.

Upon receiving participants' consent, age, location, field of study, university type (if they study/studied at privately owned university or public or national university), they were then given this hypothetical scenario:

Imagine you are offered the chance to tutor a Bangla medium secondary school student who lives 20 minutes away from you. You can tutor for 2 hours per day, and you have to teach him/her all subjects.

Based on this information and scenario, they were asked to answer the following questions.

- 1. For 3000 BDT monthly wage, how many days a week would you be willing to effectively work?
- 2. For 4000 BDT monthly wage, how many days a week would you be willing to effectively work?
- 3. For 5000 BDT monthly wage, how many days a week would you be willing to effectively work?
- 4. For 6000 BDT monthly wage, how many days a week would you be willing to effectively work?
- 5. For 7000 BDT monthly wage, how many days a week would you be willing to effectively work?
- 6. For 8000 BDT monthly wage, how many days a week would you be willing to effectively work?
- 7. For 9000 BDT monthly wage, how many days a week would you be willing to effectively work?

8. For 10,000 BDT monthly wage, how many days a week would you be willing to effectively work?

The answers showed differences in their responsiveness to wage changes and labor supply elasticity. The participants were then asked, based on the same hypothetical scenario, how much they expect to earn if they teach the student for 2 days a week. This captured their expected wage for the same given hypothetical scenario. When they were asked why they expected the amount chosen, 314 respondents believed that this was the right market rate.

These findings help to lead the rest of the study and policy suggestions. For example, if expected wage in this hypothetical scenario is seen to be very different among different groups of people that can determine different bargaining power across different genders.

# 3.2 Regression Models, Results, and Data Analysis

This paper employs the Ordinary Least Squares method for estimating the regression models. It explores the association of gender with expected earnings, monthly wage and wage responsiveness or labor supply elasticity. The study also observes how expected and monthly wage are associated with field of study, location of tutoring and type of university the home tutors study or studied at.

### 3.2.1 Gender based expected earnings per month

To analyse the responses on how many days they expect to earn tutoring this student for 2 days per week, a regression model was run looking at how gender associates with expected earnings. Expected earning= B0 + B1Gender + B3Age + B4university type + B5field of study + B6city + The regression on expected earning and gender, controlling for other variables and the findings

shows a coefficient of -2569.298 for gender.

#### Table 3: Regression on expected earning and gender

```
Call
 Im(formula = Expected_earning ~ gender_numeric + Age + university_type +
Study_field + City, data = df)
 Residuals:
Min 1Q Median 3Q Max
-6790.8 -2349.7 -614.2 1933.8 21779.2
Coefficients:
                                                                                                                            Estimate Std. Error t value Pr(>|t|)
6855.807 3093.121 2.216 0.027169 *
2569.298 359.860 -7.140 3.88e-12 *
 (Intercept)
                                                                                                                          6855.807
-2569.298
gender_numeric
                                                                                                                                                                                                            ***
                                                                                                                                                   58.602
4301.797
2243.929
2240.409
                                                                                                                                                                          0.429 0.668292
0.158 0.874255
-0.531 0.595901
                                                                                                                             25.127
681.181
Age
university_typeOthers
university_typeOtners681.181university_typePrivate University / College-1190.829university_typePublic or National University / College-1705.397Study_field-640.662Study_fieldArts and Humanities2378.204Study_fieldSocial Sciences595.734CityChittagong-3273.816
                                                                                                                                                                          -0.761 0.446945
                                                                                                                          -640.662
2378.204
595.734
-3273.816
2043.377
                                                                                                                                                                         -0.466 0.641138
3.895 0.000114 ***
                                                                                                                                                   1373.541
610.624
                                                                                                                                                                          1.508 0.132181
-0.812 0.417299
1.302 0.193546
0.836 0.403626
                                                                                                                                                   394.957
4032.391
1569.237
CityDhaka
CityDhaka
                                                                                                                            1446.922
                                                                                                                                                    1730.837
                                                                                                                                                   1893.529
2017.530
2038.860
2019.421
1593.142
                                                                                                                                                                           2.674 0.007784
0.876 0.381737
CityKhulna
CityMymensingh
                                                                                                                            5062.473
                                                                                                                           1766.500
CityRajshahi
CityRangpur
CitySylhet
                                                                                                                           1391.524
981.122
                                                                                                                                                                           0.683 0.495280
0.486 0.627320
0.746 0.455929
                                                                                                                            1188.843
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Residual standard error: 3703 on 441 degrees of freedom
(5 observations deleted due to missingness)
Multiple R-squared: 0.2069, Adjusted R-squared: 0
F-statistic: 6.053 on 19 and 441 DF, p-value: 9.523e-14
                                                                                                                         0.1727
```

The findings from Table 1 suggest that after controlling for the type of university home tutors goes to (or went to), their academic field of study, their age and their tutoring location inside the country, on an average, female home tutors have lower (by 2569.298 taka) wage expectation than male home tutors for the same given hypothetical work scenario. Here, numeric values were assigned to gender, female as 1 and male as 0. The findings are statistically significant as well. However, the R squared shows the model can explain approximately 20.69% variability. This can be due to the small survey sample size compared to the actual population.

#### **3.2.2 Gender based income per month**

The respondents were also asked about their current earnings every month through home tutoring. The study tries to find out if gender has any association with the respondents' income per month.

Wage/month = B0 + B1 Gender + B2 Age + B3 University type + B4 field of study + B5city +

е

The regression model on monthly wage and gender, controlling for city, age, location and university type shows that the coefficient for gender is -8977.758.

#### Table 4: Regression on monthly wage and gender

Im(formula = real\_wage ~ gender\_numeric + Age + university\_type +
 Study\_field + City, data = df) Residuals: Min 1Q Median -16301 -5151 -1583 3Q Max 2127 149910 Coefficients: Estimate Std. Error t value Pr(>|t|) -10379.845 12509.276 -0.830 0.40743 -8977.758 1565.045 -5.736 2.67e-08 789.302 296.463 2.662 0.00824 9.997 9033.376 0.001 0.99912 (Intercept) \*\*\* gender\_numéric Age university\_typePrivate University / College university\_typePublic or National University / College study\_field Study\_fieldArts and Humanities Study\_fieldSocial Sciences \*\* 0.72670 3160.636 9033.009 0.350 822.753 -3216.635 -2572.051 7312.878 2457.719 1762.089 0.113-1.309 0.19176 0.14559 CityChittagong 5384.277 1.202 0.23049 6471.374 CityDhaka CityKhulna 10998.483 0.333 0.966 0.946 1.476 0.04100 0.73930 0.33476 0.34525 0.14112 2245.549 6928.071 6740.697 CityMymensingh CityRajshahi 7169.233 6874.304 6500.092 CityRangpur 10726.312 7266.537 CitySylhet 6897.940 5504.293 1.253 0.21126 Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1 Residual standard error: 12300 on 261 degrees of freedom (186 observations deleted due to missingness) Multiple R-squared: 0.2221, Adjusted R-squared: 0.1684

The findings from Table 4 suggest that keeping age, city location, field of study and university type as control variables, the average wage per month for female home tutors is expected to be lower by 8977.758 taka than average wage per month for male house tutors. The p value for this is less than 0.001, so the result is statistically significant showing that gender is significantly correlated with monthly earnings through home tutoring.

However, the R squared is moderately fit. This can be due to small survey sample size and it's important to keep in mind that male home tutors could be tutoring multiple students while female home tutors could tutor only one student due to their caregiving roles and other domestic responsibilities. So, the number of students being tutored by them is not captured in the earning per month in reality.

### **3.2.3** Wage responsiveness and labor supply elasticity

To have an overview of the differences in average working days in a week between male home tutors and female home tutors for wage changes. A graph is built to show that female home tutors are more responsive to wage changes than male home tutors.



Figure 3: Changes in average working days in a week as per changes in wages

Figure 3 illustrates that female home tutors show higher changes in their working days in a week than male house tutors. It is important to note that the questions asked, and the scenarios given were all hypothetical. Hence in this hypothetical scenario of teaching all subjects for 2 hours/day to a Bangla medium secondary school student, who lives 20 minutes away; female tutors tend to increase their working days for wage increment higher than male tutors. To

support figure 3 and show the differences in labor supply elasticity, the following regression

model is run after taking log of days and log of wage.

Log of days = B0+B1 log of wage+B2 gender + B3 log of wage\* gender + c



Call: Im(formula = log\_days ~ log\_wage + gender\_dummy + log\_wage \*
 gender\_dummy, data = df2) Residuals: Min 10 -1.39098 -0.23181 Median Max 1.28948 1Q 3Q 0.27552 0.05427 Coefficients: Estimate Std. Error t value Pr(>|t|) -4.61985 0.26036 -17.744 < 2e-16 0.63976 0.02964 21.584 < 2e-16 < 2e-16 \*\*\* < 2e-16 \*\*\* (Intercept) log\_wage gender\_dummy 0.02964 0.35009 -3.891 0.000102 \*\*\* 1.36212 \*\*\* log\_wage:gender\_dummy 0.19300 4.832 0.03994 1.41e-06 Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1 Residual standard error: 0.4234 on 3389 degrees of freedom Multiple R-squared: 0.353, Adjusted R-squared: 0.3525

The findings in Table 5 show that the log wage and gender interaction term's coefficient is positive and statistically significant suggesting that the effect of wage increments differs between male home tutors and female home tutors. It shows that on an average, keeping everything else constant, the effect of 1% wage increase is expected to be approximately 0.193% larger for female house tutors compared to the males. The R squared is 0.3525 meaning approximately 35% variation in number of working days in a week can be explained by the variables included in the model. This could be due to the small and unrepresentative survey sample. This regression model does not assume omitted variables and confounding variables that could also affect the findings.

To make the findings more robust; home tutors' age, tutoring locations, type of university they study or studied at, and their academic field of study were added as control variables and findings still show a positive and statistically significant difference. It shows that the effect of 1% wage increase is expected to be approximately 0.18% larger for female home tutors compared to the males, even after controlling for these variables. However, it is important to note that the R squared is 0.38, this could be due to the small and unrepresentative survey sample. (See Annex 2)

### **3.2.4 Labor Supply Elasticity of Female Home Tutors**

Regression models are separately run for male and female to observe the association between changes of wages and changes of days worked in a week. To comment better about labor supply elasticity, log of both wage and days were taken for easier data interpretation. Log of days worked per week =  $B0 + B1 \log of wage offered per month + e$ 

### Table 6: Labor elasticity of female home tutors

As seen in Table 6, the labor supply elasticity of female home tutors is 0.83. This suggests that for female home tutors, on an average a 1% increase in wage is associated with approximately 0.83% higher number of days in a week they would be willing to work.

To check for robustness of the findings, different model specifications were tried. Tutoring locations, home tutors' academic field of study, age, and university type were added in the

model. For female home tutors, the coefficient of log wage is 0.839216 (See Annex 3). This means after controlling for these variables, on an average, female home tutors are expected to increase their number of working days in a week by approximately 0.83% in response to a 1% wage increment.

### **3.2.5 Labor Supply Elasticity of Male Home Tutors**

Another regression model was run to interpret the labor supply elasticity of male home tutors

Log of days worked per week =  $B0 + B1 \log of$  wage offered per month + e

Table 7: 1	Labor el	lasticity o	f male	home	tutors
------------	----------	-------------	--------	------	--------

```
Call:
lm(formula = log_days ~ log_wage, data = maleregression)
Residuals:
                  Median 3Q
0.1120 0.3406
Min 10
-1.2743 -0.3525
                                        Мах
                                     1.2891
Coefficients:
Estimate Std. Error t value Pr(>|t|)
(Intercept) -4.62871 0.29756 -15.56 <2e-16 ***
                                               <2e-16 ***
log_wage
              0.64091
                           0.03388
                                      18.92
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Residual standard error: 0.4831 on 1604 degrees of freedom
Multiple R-squared: 0.1824,
                                     Adjusted R-squared: 0.1819
```

As seen in Table 7, for male home tutors, the findings suggests that keeping everything else constant, a 1% increase in wage is associated with 0.64091% higher number of days in a week that they are willing to work. This shows that female home tutors are more labor supply elastic than male home tutors.

To check for robustness of the findings, different model specifications were tried. The tutors' location, academic field of study, age, and university type were added to the regression model. For male home tutors, the coefficient of log of wage is 0.658188. This means that after

controlling for these variables, male home tutors are expected to work 0.65% higher number of days in a week in response to a 1% wage increment.

### 3.2.6 Differences based on the type of home tutors' university

The home tutors can graduate from or are studying at public, national, or private or other type of universities and colleges which could be related to their socio-economic background, which in turn can affect their wage responsiveness. In this model, public universities and colleges were used as the reference category to explain the differences. After controlling for the relevant variables, for female tutors from private universities, a 1% wage increase would cause on average, approximately 0.009% higher number of days per week they would tutor, on average, compared to the ones from public universities. (See Annex 3) However, this finding is not statistically significant here as well. This could be due to a small and unrepresentative survey sample. Hence, we cannot comment strongly on this as well. For male home tutors, the coefficient of university type for private universities and colleges is 0.028992. (See Annex 4). This suggests that after controlling for the relevant variables, on average, male home tutors from private universities are expected to be willing to work higher number days per week; approximately 0.028% higher than the ones from public or national university and colleges because of 1% wage increment. In other words, the labor supply of male home tutors from public and national universities are less elastic compared to the home tutors from private universities. However, it is important to note that the coefficient for this is not statistically significant. Hence, we cannot comment strongly on this.

### 3.2.7 Field of study-based differences

The findings of the study suggest that after controlling for age, location of tutoring, type of university they study/studied at, female home tutors from arts and humanities are expected to

have higher labor supply elasticity (approximately 0.13%) on an average compared to the ones from natural science background. Female home tutors from the social science study field have higher labor supply elasticity (about 0.069%) on average compared to the ones from natural science background. These findings are statistically significant. However, the R squared of this model shows a moderate level of fit which could be due to the small survey sample size. (See Annex 3)

The findings in the study field suggest that after controlling for age, location of tutoring, type of university they study/studied at, on average male home tutors from arts and humanities background are expected to be approximately 0.15% lower labor supply elastic than the ones from natural science background. In contrast, male home tutors from social science backgrounds are approximately 0.045% more likely to increase their number of working days compared to the ones from natural science background in response to a 1% increase in wages. In both cases, the difference is statistically significant (See Annex 4).

We see that the association between field of studies and wage responsiveness varies across genders and have significant association with wage responsiveness and labor supply elasticity, hence controlling for this variable in assessing wage responsiveness between male and female was necessary.

### 3.2.8 Location based differences

The City variable explains the location of tutoring within the country. The major cities that came out of this survey are- Dhaka, Chittagong, Barisal, Mymensingh, Khulna, Rajshahi, Rangpur, and Sylhet. Not all cities showed statistically significant differences. Hence, the study only mentions the ones that are significant and more interesting. Dhaka- the capital city was held as the reference category for this model. For female home tutors teaching in Chittagong, on an average, the wage responsiveness and labor supply elasticity is approximately 0.12% higher than the ones in Dhaka. For Mymensingh, on average this labor supply elasticity is approximately 0.41% higher than the ones in Dhaka. Controlling for age, university type and field of study, on an average, as a response to 1% higher wage, female home tutors in Barisal show approximately 0.21% higher wage responsiveness compared to the ones teaching in Dhaka. In all cases the findings are statistically significant. (See Annex 3)

Holding Dhaka- the capital city as the reference category; it was observed that on average, after controlling for age, university type and academic background, male home tutors from Barisal are expected to have approximately 0.26% higher labor elasticity compared to the ones in Dhaka. However, this finding is marginally significant. But in the case of the comparison between Chittagong and Dhaka, we find statistically significant differences. Controlling the relevant variables, male home tutors in Chittagong on average have 0.27% higher labor supply elasticity than those in Dhaka. A statistically significant difference in the comparison between Rangpur and Dhaka was also observed where a 1% wage increase causes male home tutors to work 0.79% more days than the ones in Dhaka. (See Annex 4)

In both cases, we see that the effect of wage increment on the number of working days in a week varies across cities in the country and the differences are significant. For both male and female tutors, there was lower wage responsiveness in the capital compared to other cities. This could be due to the capital offering a wider range of jobs fields (both formal and informal) in the economy compared to other cities.

### **3.2.9** Male and female home tutors switching to formal jobs

The study also included participants who are not currently working as home tutors but have recently home tutored students. They were asked for their reason behind leaving this employment sector. A regression model was run looking at the interaction of gender and home tutors switching to formal jobs.

Table 8: Regression on switching to formal job and gender

```
Call:
lm(formula = reasons_for_not_dummy ~ gender_dummy + Age + City +
            Study_field + university_type, data = df_filtered)
 Residuals:
Min 1Q Median 3Q Max
-0.8661 -0.2294 0.1195 0.2999 0.7473
Coefficients:
                                                                                                                                 Estimate Std. Error t value Pr(>|t|)
0.9347773 0.0977286 9.565 < 2e-16
-0.2218837 0.0255835 -8.673 < 2e-16
-0.0005566 0.0035408 -0.157 0.87512
-0.1680171 0.0311786 -5.389 8.50e-08
-0.1106158 0.0928323 -1.192 0.23366
                                                                                                                                                                                                                        < 2e-16 ***
< 2e-16 ***
0.87512
(Intercept)
gender_dummy
Age
CityChittagong
CityKhulna
                                                                                                                                                                                                                                                  ***
                                                                                                                                                                                                  \begin{array}{cccc} -1.192 & 0.23366 \\ 1.309 & 0.19071 \\ 2.838 & 0.00461 \\ -1.062 & 0.28858 \\ -1.467 & 0.14250 \\ -7.618 & 5.15e-14 \\ 0.508 & 0.61155 \\ 2.623 & 0.00883 \\ 0.705 & 0.48102 \\ -2.280 & 0.02276 \end{array}
                                                                                                                                 0.1100138
0.1366400
0.3021336
-0.0369905
-0.1257821
                                                                                                                                                                  0.1043689
0.1064528
0.0348411
0.0857119
CityMymensingh
CityRangpur
CitySylhet
Study_field
Study_fieldArts and Humanities
Study_fieldSocial Sciences

        Study_fieldArts and Humanities
        -0.4103894
        0.0538735

        Study_fieldArts and Humanities
        -0.4103894
        0.0538735

        Study_fieldSocial Sciences
        0.0129924
        0.0255763

        university_type
        0.4660193
        0.1776729

        university_typePrivate University / College
        -0.0575032
        0.0252180

                                                                                                                                                                                                                                                 ***
                                                                                                                                                                                                                          0.00883 **
                                                                                                                                                                                                                          0.02276 *
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Residual standard error: 0.4046 on 1225 degrees of freedom
Multiple R-squared: 0.2117, Adjusted R-squared: 0.2014
F-statistic: 20.56 on 16 and 1225 DF, p-value: < 2.2e-16
```

As seen in Table 8, after controlling for age, location, study field and university type it is found that there is a negative correlation between female home tutors and tutors' choosing - switching to formal jobs as a reason to leave home tutoring as a profession. The result is statistically significant. The R square shows moderate fit.

# **CHAPTER 4: MECHANISM AND DISCUSSION**

# 4.1 Higher wage expectation leading to better bargaining power

As seen in the findings from Table 1 on expected monthly income for a given hypothetical scenario, female home tutors expect lower wage than male home tutors. This can indicate to female home tutors having lower bargaining power. With lower wage expectation, female home tutors may begin negotiating at lower wage demand compared to male home tutors and go on to increasing their labor supply higher than male home tutors as a response to wage increment. This can further the gender pay gap in this informal job sector where we have no wage transparency and no insights on the gender pay gap. The households who are purchasing the home tutors than male employed at their service. This can lead to lower wage for female home tutors overall.

# 4.2 The catch-up effect for lower income group

As seen in the findings from Table 2, female home tutors earn significantly less than male home tutors. Even after keeping age, city location, field of study and university type constant, the average monthly wage for female home tutors is lower by 8977.758 taka than average monthly wage for male home tutors. Hence, wage increment can result in a faster catch-up effect in their working days. In other words, the wage increment may seem larger to female home tutors since they already earn less than male home tutors. Hence, they are willing to increase their working days more than male home tutors in response to a small wage increment.

## 4.3 Differences in transition to formal economy

As seen in literature review, women in Bangladesh have higher participation in informal labor market, most of which are part time jobs. Home tutoring is an informal economy, and quite a popular part time work choice among university going students. The literature review findings align with the findings of this study as well where we observe a strong negative correlation between female home tutors and home tutors switching to formal jobs from this sector. The survey shows that among the respondents who are not home tutoring anymore; 38 female respondents replied that they stopped working in this sector because they found a formal job, compared to 73 male respondents reported that they stopped working in this sector because they found a formal job. 32 female home tutors replied it is due to unhealthy and unsafe working conditions, 5 female home tutors replied it is due to low earnings. We see that while female home tutors chose various reasons for leaving this sector, majority of the male respondents indicated that they already entered the formal job market and hence left home tutoring as their profession. This aligns with the findings in literature review that men have larger share of participation than women in formal labor market. The regression models to assess wage responsiveness and labor supply elasticity also included both male and female participants who are not home tutoring anymore. In this way, the findings also captured the perception of the ones who entered formal job market as well as the ones who may not have entered. That makes the findings more robust. Less access and participation in the formal job market can be a key reason behind women having higher wage responsiveness and labor supply elasticity. However, as per the literature review, when the income effect causes a significant increase in leisure time, men's own wage elasticities can also be negative. In that case, male and female home tutors' labor supply elasticity should have been the same. One reason behind the different outcomes we have observed in their wage responsiveness and labor supply elasticity can be women's lower participation in formal economy and women being aware of their inability to

enter formal economy due to their role as the primary caregiver in the family. Hence women preferring to stay at part time informal labor market with more flexible working days compared to men can play a key role in this case. Proof of this can also be found in the literature review where we see that women in Bangladesh are typically the primary caregivers for their families, which forces them to manage their work-life balance differently than men. This can also be the reason behind why in this study we have seen that a smaller number of female home tutors compared to male are switching to formal jobs. Because informal labor market such as home tutoring can offer more flexibility to adjust their working time compared to a formal labor market with fixed working time. Hence remaining in this part time informal market, when home tutors are offered a wage increment, female home tutors tend to increase their working time more than male home tutors.

# CHAPTER 5: POLICY RECOMMENDATIONS AND EVALUATION

As the participants were asked, based on the same hypothetical scenario, how much do they expect to earn if they teach the student for 2 days a week; they responded with different amounts and the findings showed us a huge difference between what a male home tutor expects versus what a female home tutor expects. When they were asked why they expected the amount chosen, 314 out of 466 respondents believed that this was the right market rate. It was found that female home tutors expect less wage than the male ones. Hence, the issues in home tutoring regarding wage responsiveness and gender-based pay gap revolve around lack of wage transparency that causes home tutors' different perception on what is the right market rate. The findings also indicated differences in wage responsiveness among home tutors coming from different fields of study or them tutoring in different locations within the country. Hence the policies suggested should focus on improving wage transparency as well as the gender-based wage gap in the market.

### 5.1 Policy option 1

#### A Minimum Wage Act that would apply to informal job sectors

A minimum wage act from the government that extends to informal job sector can help regulate the wage distribution. The implementation of a minimum wage can create a salary floor below which households purchasing this service are not permitted to pay the home tutors. By guaranteeing that they receive an equitable minimum wage in exchange for tutoring, this helps to avoid the exploitation of workers with higher wage responsiveness, particularly women. This can also work as a standard for appropriate compensation which can enhance female home tutors' bargaining power, because they would be start negotiating and expecting their salary from a fair compensation point. This policy can also address the gender pay gap through ensuring a minimal amount for women as well as home tutors who come from less demanded field of study. This also prevents excessively low salary as found in the survey some women were earning as low as 2500 BDT in contrast to many men earning about 25000 BDT. This huge gender-based pay gap and low play can be addressed by establishing a salary floor.

#### **Evaluation of suggested policy**

One problem that could arise with this policy can be explained by Mazumdar's (1989) twosector labor market model, where both the formal and informal sectors had competitive market salaries and full employment prior to the implementation of the minimum wage that extends to informal economy. Some workers can lose their jobs in the formal labor market after the minimum wage is implemented, which raises wages in the formal sector. Some of these workers might opt to wait for a job in the formal sector while they are still unemployed. Other job seekers can look for work in the informal sector. By increasing the labor supply in the informal labor market, this would lower the wage in the informal sector. Hence the informal labor market might start paying lower than the competitive wage. However, there are cases where this does not happen, where setting or changing the minimum wage in the informal sector does not affect the formal job sectors. For example, Khamis (2008) conducts a study to examine how Argentina's formal and informal labor markets are affected by changes in the minimum wage. The findings indicate that the change in the minimum wage has had a considerable positive influence on the wage in the informal sector and on the distribution of wages generally. The formal sector salary did not exhibit any significant effects. More importantly, the question remains whether to sustain this informal job market and a shadow education system or to strengthen the formal education system in a way that does not require an informal education system and labor market.

# 5.2 Policy option 2

### An online platform to disseminate knowledge and wage transparency

Bringing together the home tutors to establish wage transparency can be an effective policy tool. Home tutors graduating from public or national universities with an academic background in natural science may have higher demand in the market. Hence, the supply driven by academic background can be explained, however differences in labor supply elasticity and earning among male and female home tutors with similar academic background is unfair discrimination. Keeping these cases in mind, a website or Facebook group or an online platform is necessary to inform home tutors what wage to expect based on different academic backgrounds, universities and tutoring locations - so households purchasing their services do not exploit the vulnerable groups. This way, female home tutors would know what wage to negotiate for and fix their wage expectation accordingly. By implementing a website, Facebook group or mobile app for wage posting, this sector can continue to operate without official regulations, protecting the flexibility and individualized nature of tutoring arrangements. It would promote equal treatment and transparency while avoiding the potential negative effects of formalization. Parents, students, and tutors may use the website as an interface to voluntarily exchange details about the payment they receive for tutoring services. By improving their understanding of going market rates and allowing them to make informed decisions about hiring and wages, this transparency can help home tutors. The online platform can promote the idea of fair competition in home tutoring by enabling tutors to compare their earnings with each other. Both household and home tutors can evaluate their pricing approach and, if necessary, make adjustments if they have access to the stated wages of other tutors. This elimination of information asymmetry can increase market efficiency. The online platform can also be used for experience sharing and

complaint section to address the issue of female home tutors replying "'Unhealthy/Unsafe work environment" as a reason for leaving this job sector.

### **Evaluation of suggested policy**

There are some potential problems with this policy approach. There can be limited participation of home tutors and household who would not wish to disclose their wage and since this is an informal sector, it would not be mandatory for them to disclose this information. This can lead to incomplete information where home tutors might not provide full information on their location, age, academic background etc. It is also going to be difficult to ensure the information provided is correct and valid. There is also a possibility of market distortion with wages being determined by disclosed information rather than by the true value of tutoring services. This can put the quality of home tutoring services at risk. There can also be a competitive pressure where certain groups for example, women would be compelled to lower their wages to get more home tutoring offers which can reinforce the existing inequalities.

## 5.3 Policy option 3

### Formalizing this sector and regulating wage distribution

Formalizing this sector and regulating wage distribution can bring transparency into what the actual market rate should be. A legislative framework outlining work areas and rights of tutors and students can ensure fair pricing and prevent exploitation. This can be an alternative to not sustaining an informal job sector. Moreover, this policy tool can also give home tutors access to professional growth, certification etc. Formalizing this sector can also help better address to address the issue of female home tutors stating "Unhealthy/Unsafe work environment" as a reason for leaving this job sector, as it can then place policies in action to make their work environment safer with better tracking system.

### **Evaluation of suggested policy**

Some potential problems that can arise with formalizing this economy are that it can increase the home tutoring fees for parents and students that results from compliance and administrative costs. This can make home tutoring services less affordable for many families in the demand side. On the supply side, this policy can result in limited flexibility which can mostly be a disadvantage for female home tutors as women have higher participation in informal workforce due to caregiving responsibilities. This would also mean the home tutors would have to be tax paying citizens and since most of these home tutors are university going students with academic pressure of their own, formalizing this service can lead to more administrative work for them that can take time away from tutoring and their interaction with students. However, this issue can be solved with benefits and advantages offered to them such as increased access to teaching and learning resources, tax deductions and assistance, rewards for registrations etc.

# **CHAPTER 6: CONCLUSION**

Home tutoring has been existing as a shadow education system in Bangladesh for a long time. Both men and women in the country have been actively participating in this informal labor market and contributing to the students' education as the government continues to provide limited fund for education, and the school and colleges keep having low pupil-teacher ratio. As this informal labor market continues to grow, female home tutors are at risk for being exploited for having higher labor supply elasticity.

The key findings of this study shows that labor supply of female home tutors is more elastic than male home tutors. The underlying mechanism behind this as pointed out by this study is that female home tutors expect less wage for the same job compared to male home tutors, female have less monthly income in this sector than male home tutors, and female have less participation rate in formal economy as well as lower switching rate to formal job from home tutoring.

Since this is an informal economy, there is no wage transparency for female home tutors as well as other groups to be informed on what wage to expect and the number of days they should be working for the given wage. Households can take advantage of this situation and benefit from paying female less than male, which can further the gender pay gap. Hence, addressing this issue is important and the policies recommended should be considered. Further studies on this labor market should be conducted to understand the dynamics better.

# **CHAPTER 7: LIMITATIONS AND FUTURE STUDIES**

The questions asked to assess wage responsiveness and labor supply elasticity are all hypothetical; tutors can act differently or adjust their working hours differently in real life scenarios. The R squared are moderately fit for most regression models, this can be due to the small survey sample size. The data collected on monthly wage for both male and female tutor does not capture the number of students they are tutoring; male tutors could have multiple students while female could have only one. The marriage status of the respondents has not been recorded which can influence home tutors' labor supply elasticity. A strong limitation faced while conducting this study is the lack of existing literature and study conducted in home tutoring in Bangladesh, despite it being a shadow education system and a large informal economy for a long period of time. This proves the need for more studies in this.

Future studies and research should be conducted to understand the dynamics of supply side of informal economy such as this better. Since this is a very popular job option among university going students and graduates, studies should be conducted on the interaction of supply and demand. It would also be interesting to explore the differences in labor force participation and labor supply elasticities among married and unmarried home tutors.

# ANNEXES

## Annex 1

### **Survey Questionnaire**

Thank you for participating in this study!

The study is being conducted at the Central European University, Department of Economics and Business. The main aim of the study is to assess how responsive home tutors are to wage changes. To the best of our abilities, your responses in this survey will be kept anonymous, and no individual data will be released. You will not be asked for any personal information that might be used to identify you or put you in danger. Your participation in this study is entirely voluntary, and you may opt out at any moment by closing the tab or window of your browser. To complete the study, please read all instructions carefully and answer the follow-up questions. We estimate that finishing the study will take around 5 minutes. By checking the box below, you indicate that you are giving your informed consent for participating in the study.

Q1: Age

Q2: Gender Options: Male/ Female/ Others

Q3: Name of the city you are currently living in

Q4: Your field of study Options: Natural Science/Social Science/Arts and Humanities

Q5: Please indicate your university/College type. Options: Public/Private/Others

Q6: Are you currently home tutoring? (This means going to a school/college student's house to teach them different subjects)

Q7: If your previous answer is "Yes", how much (in BDT) do you earn per month?

Q8: If your previous answer is "no", why are you not currently home tutoring? Options: I have a formal job now / The earning is not enough for me/ Academic pressure / Unhealthy or unsafe work environment / Others

Q9: Imagine you are offered to tutor a Bangla medium secondary school student who lives 20 minutes away from you. You can tutor for 2 hours per day and you have to teach him/her all subjects. Based on this information, please answer the following questions.

Q10: For 3000 BDT monthly wage, how many days a week would you be willing to effectively work?

Q11: For 4000 BDT monthly wage, how many days a week would you be willing to effectively work?

Q12: For 5000 BDT monthly wage, how many days a week would you be willing to effectively work?

Q13: For 6000 BDT monthly wage, how many days a week would you be willing to effectively work?

Q14: For 7000 BDT monthly wage, how many days a week would you be willing to effectively work?

Q15: For 8000 BDT monthly wage, how many days a week would you be willing to effectively work?

Q16: For 9000 BDT monthly wage, how many days a week would you be willing to effectively work?

Q17: For 10,000 BDT monthly wage, how many days a week would you be willing to effectively work?

Q18: In reality, how much (in BDT) do you expect to earn in a month for tutoring this student for two days per week?

Q19: What's your reason for setting this wage? Options: I believe this is the right market rate/ I believe I come from a reputed university / I believe my academic background plays a role Q20: If you clicked "Others" above, please briefly explain your reasons.

# Annex 2

### Table 9: Robustness check for differences in labor supply elasticity

Call: lm(formula = log_days ~ log_wage + gender_dummy + log_v gender_dummy + Age + City + Study_field + universit data = df2)	vage * ty_type,
Residuals: Min 1Q Median 3Q Max -1.3830 -0.2340 0.0506 0.2814 1.1218	
Coefficients:	Fatimata
<pre>(Intercept) log_wage gender_dummy Age CityChittagong CityDhaka CityKhulna CityKhulna CityRajshahi CityRangpur CityRajshahi CityRangpur CitySylhet Study_fieldArts and Humanities Study_fieldArts and Humanities Study_fieldNatural Science Study_fieldNatural Science Study_fieldSocial Sciences university_typeOthers university_typePrivate University / College university_typePublic or National University / College log_wage:gender_dummy</pre>	-4.689752 0.652494 1.295246 0.009369 -0.097353 -0.186078 -0.065406 -0.051970 -0.013368 0.013870 -0.167935 0.205800 -0.138822 -0.151182 -0.089383 0.784002 -0.021277 -0.044364 0.183682
<pre>(Intercept) log_wage gender_dummy Age CityChittagong CityChittagong CityChittagong\n CityChittagong\n CityDhaka CityDhaka CityBhaka CityKhulna CityKhulna CityKajShahi CityRajShahi CityRangpur CitySylhet CitySylhet CitySylhet Study_fieldArts and Humanities Study_fieldArts and Humanities Study_fieldNatural Science Study_fieldSocial Sciences university_typeOthers university_typePrivate University / College university_typePublic or National University / College log_wage:gender_dummy</pre>	0.287634 0.028984 0.342184 0.002407 0.064337 0.063554 0.159798 0.063371 0.070200 0.076088 0.082944 0.081567 0.083075 0.064338 0.124287 0.059249 0.055448 0.055606 0.172809 0.094416 0.094254 0.039028 t value Pr(> t )
(Intercept) log_wage gender_dummy Age CityChittagong CityDhaka	-16.305 < 2e-16 22.512 < 2e-16 -3.785 0.000156 3.892 0.000101 -1.513 0.130328 -2.936 0.003344

CityDhaka CityKhulna CityMymensingh CityRajshahi CityRangpur CitySylhet Study_fieldArts and Humanities Study_fieldNatural Science Study_fieldSocial Sciences university_typeOthers university_typePrivate University / College	0.305 0.760460 -0.860 0.390067 -0.627 0.530986 -0.164 0.869825 0.167 0.867415 -2.610 0.009089 -2.343 0.019186 -2.727 0.006433 -1.607 0.108051 4.537 5.91e-06 -0.225 0.821714			
luniversity_typePublic or National University / College log_wage:gender_dummy	-0.4/1 0.637892 4.706 2.62e-06			
(Intercept) log_wage	***			
gender_dummy	***			
Age CityChittagong CityChittagong CityChittagong\n CityDhaka CityDhaka CityKhulna CityMymensingh CityRajshahi CityRangpur	***			
Citýsylhet	**			
Study fieldarts and Humanities	• *			
Study_fieldNatural Science	**			
Study_fieldSocial Sciences university_typeOthers university_typeBrivate University ( College	***			
university_typePublic or National University / College log_wage:gender_dummy	***			
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1				
Residual standard error: 0.4133 on 3371 degrees of freedom Multiple R-squared: 0.3868, Adjusted R-squared: 0.3829 F-statistic: 101.2 on 21 and 3371 DF, p-value: < 2.2e-16				

# Annex 3

Table 10: Robustness check for labor supply elasticity of female home tutors

Call: lm(formula = log_days ~ log_wage + university_type + Study_field + City + Age, data = femaleregression)						
Estimate	Std. Error	t value	Pr(> t )			
-6.379021	0.209420	-30.460	< 2e-16	***		
0.839216	0.022297	37.638	< 2e-16	***		
-0.387077	0.145511	-2.660	0.007882	**		
0.009985	0.018186	0.549	0.583028			
0.185297	0.053871	3.440	0.000596	* * *		
0.133824	0.028741	4.656	3.46e-06	* * *		
0.069074	0.019439	3.553	0.000390	* * *		
0.218014	0.065801	3.313	0.000941	* * *		
0.120988	0.022843	5.296	1.33e-07	* * *		
0.117744	0.065600	1.795	0.072845			
0.413346	0.090558	4.564	5.35e-06	***		
0 120006	0 054923	2 185	0 029021	*		
0.184383	0.065080	2.833	0.004661	**		
0 019864	0 026564	0 748	0 454692			
0.009126	0.003031	3.011	0.002645	**		
	Estimate 6.379021 0.839216 0.387077 0.009985 0.185297 0.133824 0.218014 0.218014 0.120988 0.117744 0.120988 0.117744 0.120066 0.184383 0.019864	Estimate Std. Error 6.379021 0.209420 0.839216 0.022297 0.387077 0.145511 0.009985 0.018186 0.185297 0.028711 0.133824 0.028741 0.169074 0.019439 0.218014 0.065801 0.120988 0.022843 0.117744 0.065600 0.413346 0.090558 0.12006 0.054923 0.184383 0.065080 0.019864 0.026564 0.009126 0.003031	Estimate Std. Error t value 6.379021 0.209420 -30.460 0.839216 0.02297 37.638 0.387077 0.145511 -2.660 0.009985 0.018186 0.549 0.133824 0.028741 4.656 0.069074 0.019439 3.553 0.218014 0.065801 3.313 0.120988 0.022843 5.296 0.117744 0.065600 1.795 0.413346 0.090558 4.564 0.12006 0.054923 2.185 0.184383 0.065080 2.833 0.019864 0.026564 0.748 0.009126 0.003031 3.011	Estimate Std. Error t value Pr(> t ) 6.379021 0.209420 -30.460 < 2e-16 0.839216 0.02297 37.638 < 2e-16 0.387077 0.145511 -2.660 0.007882 0.009985 0.018186 0.549 0.583028 0.185297 0.053871 3.440 0.000596 0.133824 0.028741 4.656 3.46e-06 0.069074 0.019439 3.553 0.000390 0.218014 0.065801 3.313 0.000941 0.120988 0.022843 5.296 1.33e-07 0.117744 0.065600 1.795 0.072845 0.413346 0.090558 4.564 5.35e-06 0.120006 0.054923 2.185 0.029021 0.184383 0.065080 2.833 0.004661 0.019864 0.026564 0.748 0.454692 0.009126 0.00301 3.011 0.002645		

```
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Residual standard error: 0.3523 on 1762 degrees of freedom Multiple R-squared: 0.4592, Adjusted R-squared: 0.454 F-statistic: 88 on 17 and 1762 DF, p-value: < 2.2e-16

### Annex 4

### Table 11: Robustness check for labor supply elasticity of male home tutors

```
Call:
lm(formula = log_days ~ log_wage + Study_field + +university_type +
City + Age, data = maleregression)
Residuals:
                      1Q
                             Median
       Min
                                                 3Q
                                                             Мах
-1.25718 -0.32153 0.05375 0.33049 1.10648
Coefficients:
                                                                  Estimate Std. Error t value Pr(>|t|)
                                                                                   0.304377 -16.681 < 2e-16 ***
0.032491 20.257 < 2e-16 ***
0.165216 1.817 0.06948
(Intercept)
                                                                  -5.077229
log_wage
Study_field
                                                                   0.658188
                                                                   0.300122
                                                                                                             0.00117 **
Study_fieldArts and Humanities
                                                                 -0.158580
                                                                                   0.048770
                                                                                                  -3.252
Study_fieldSocial Sciences
university_type
university_typeOthers
university_typePrivate University / College
CityBarisal
                                                                  0.045287
0.271363
                                                                                   0.026984
0.129840
0.168153
                                                                                                   1.678
2.090
                                                                                                             0.09348
0.03678
                                                                                                                          ÷
                                                                   0.869587
                                                                                                   5.171 2.62e-07 ***
                                                                  0.028992
                                                                                   0.024314
                                                                                                   1.192
                                                                                                              0.23329
                                                                   0.263196
                                                                                   0.133432
                                                                                                   1.973
                                                                                                             0.04872 *
                                                                                                   7.756 1.56e-14 ***
1.381 0.16756
0.241 0.80924
CityChittagong
                                                                   0.270107
                                                                                   0.034826
CityKhulna
                                                                   0.091474
                                                                                   0.066252
CityMymensingh
                                                                   0.018478
                                                                                   0.076532
                                                                   0.214089
                                                                                                   1.800 0.07197 .
2.350 0.01889 *
4.795 1.78e-06 ***
                                                                                   0.118905
0.096453
CityRajshahi
CityRangpur
CitySylhet
                                                                   0.794573
                                                                                   0.165711
                                                                   0.007393
                                                                                   0.003797
                                                                                                   1.947
                                                                                                             0.05168
Age
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Residual standard error: 0.4619 on 1586 degrees of freedom
Multiple R-squared: 0.2613, Adjusted R-squared: 0.2525
F-statistic: 29.53 on 19 and 1586 DF, p-value: < 2.2e-16
```

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