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Gender Equality in Education, Health Care, and Employment: Evidence from Vietnam

Nguyen Viet Cuong¹

Abstract

This paper examines gender equality in three important aspects including education, health care and employment in Vietnam. Data used in this paper are from the most recent Vietnam Household Living Standard Surveys in 2004, 2006 and 2008. It is found that there are no differences in primary and lower-secondary education enrolment between girls and boys for the whole country as well as for different people groups such as urban/rural, ethnic minority and Kinh/Hoa people. Women are more likely than men in using outpatient and inpatient health care services. However, for people above 14 years old, men still have higher education and a higher rate of literacy than women. Women are less likely than men in having wage employment, and their wage is lower than men's wage. Women have to do more housework than men even after the working hours for income are controlled for.

Keywords: gender equality, education, health, employment, household survey, Vietnam.

JEL Classification: J10; J16; I0.

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1. Introduction

Gender equality is one of important Millennium Development Goals that countries throughout the world aim to achieve. Elimination of gender inequality is “of genuine interest in itself” (Costa et al., 2009). In addition, there is positive association between gender equality and development. There is a large number of studies finding that gender inequality in education can reduce economic growth (for example, Dollar and Gatti, 1999; Appiah and McMahon, 2002; Klasen, 2002; and Klasen and Lamanna, 2003). Gender inequality in education leads to low human capital and productivity for women and for the whole society. Gender inequality in education can result in gender inequality in employment. Women who have high education are more likely to find a high income job in enter the formal labor market. In the informal sector, education can also increase productivity, and the returns to education can be higher for women than for men (Udry et al., 1995; Quisumbing 1996). Gender inequality in health can also impede the human capital and thereby economic growth.

Vietnam has committed to implementation of Millennium Development Goals (MDGs) in 2000. One of the MDGs is to achieve gender equality and empowerment of women. More specifically, all the countries aim to remove the gender inequality in education by the year 2015. Vietnam has basically achieved this MDG.

Vietnam has achieved significant success in promoting gender equality and empowering women. Compared to other countries with similar economic development, Vietnam has higher gender development indexes. According to Human Development Report 2007/2008 of United Nations, Human Development Index (HDI) of Vietnam ranks 105th, but Gender-related Development Index (GDI) of Vietnam ranks 92 among 177 countries (United Nations, 2008). The GDI value has increased overtime, equal to 0.668 in 1998, 0.689 in 2004, and 0.732 in 2005.² Also according to this report, Vietnam has achieved Gender Empowerment Measure (GEM), grade placing it 52 out of 144 countries measured. In World Development Report 2007 of World Bank, Vietnam is mentioned as a country which has obtained remarkable achievements in gender equality (World Bank, 2007).

Gender inequality in Vietnam has been investigated and described in several studies (for example, see Wells, 2005; Le, 2006; and MPI, 2008). Most studies find an increase in gender equality in education in Vietnam. Now, there is almost no difference in school enrolment between boys and girls in Vietnam. However, gender inequality in employment and management remain persistent. Women are less likely to have wage jobs and leading positions than men.

² The most recent GDI of Vietnam was estimated in 2005.

In this paper, we examine the gender equality in Vietnam using the most recent Vietnam Household Living Standard Surveys in 2004, 2006 and 2008. Gender equality is analyzed in three important aspects including education, health care and employment. Gender studies in Vietnam often use the descriptive statistics. In this paper, we use regression methods to investigate the pattern of gender inequality in Vietnam. Using regressions in gender analysis have two main advantages. Firstly, we can examine whether there is still a difference in welfare indicators between men and women once other observed variables are controlled. Secondly, by using interactions between the gender variable and individual characteristics, we can test whether the gender gap in welfare indicators differs across individual characteristics (i.e., for different groups of people).

The paper is structured into five sections. The second section introduces data sources used in this analysis. The third section presents gender gaps in education, health care utilization and employment in Vietnam. Next, the fourth section uses the regression techniques to examine the gender gaps. Finally, the sixth section puts forwards several policy implications for gender equality and concludes.

2. Data source

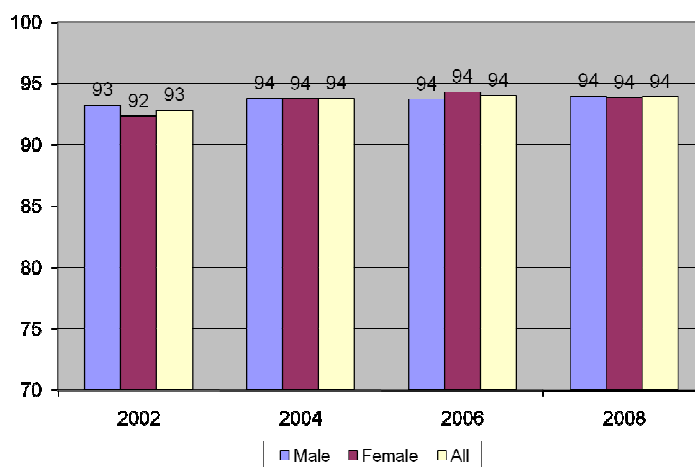
The main data set used in this study is the three recent Vietnam Household Living Standard Surveys (VHLSS). These surveys were conducted by the General Statistics Office of Vietnam (GSO) with technical supports from the World Bank (WB) in the years 2004, 2006 and 2008. The 2004, 2006 and 2008 VHLSSs covered 9188, 9189 and 9189 households, respectively. The samples are representative for the national, rural and urban, and regional levels.

The surveys collected information through household, individual and community level questionnaires. Information on households and individuals includes demography, employment and labor force participation, education, health, income, expenditure, housing, fixed assets and durable goods, and involvement in poverty alleviation programs. Information on commune characteristics was collected from 2181 communes. Commune data includes demography, general economic conditions, aid programs, non-farm employment, agricultural production, local infrastructure and transportation, education, health and health facilities, and social problems. The commune data can be linked with the household data.

3. Gender equality in Vietnam

It can be said that Vietnam has removed gender gaps in education. Figure 1 presents the ratio of schooling children between 6 and 14 year olds (primary and lower secondary schools) for boys and girls. It shows that the ratio of children attending school was rather stable during the period 2002-2008. There is almost no difference in schooling ratio between boys and girls. In 2008, the proportion of children in schools was around 94 percent for boys and girls.

Figure 1: Ratio of schooling children between 6-14 years old (%)



Source: Author's estimation from VHLSSs

The above figure focuses on children. For adults, men still often have higher education than women. According to Table 1, the proportion of women above 14 year old without an educational degree was higher for that proportion of men. This difference was not decreased overtime. In 2004, the proportion of people not completing primary school was 18 percent and 29.7 percent for men and women, respectively. In 2006, the corresponding figures were 15.6 percent and 26.3 percent.

Table 1: Highest education degrees of people above 14 years old

Highest education degrees	2004		2006		2008	
	Male	Female	Male	Female	Male	Female
No degree	18.0	29.7	16.4	27.7	15.6	26.3
Primary	25.0	23.3	24.1	23.3	23.0	22.5
Lower secondary	29.5	26.4	30.0	26.9	29.2	26.8
Upper secondary	12.6	10.7	13.6	11.2	15.7	13.1
Professional training	9.6	6.2	10.8	7.0	10.7	6.8
College, university	5.2	3.6	5.0	4.0	5.9	4.6
All	100	100	100	100	100	100

Source: Author's estimation from VHLSSs

The main reason for the difference in education between men and women is the gender inequality in the past. Men had better access to education than women in the past. However, with the current trend in education equality, there will be no difference in education between men and women in the future.

Table 2 presents the use of health care services. Men and women have very similar proportions of having health insurance. It is interesting women are more likely to visit health care establishments. The difference is larger for outpatient health care than for inpatient health care.

Table 2: Health care utilization

Highest education degrees	2004		2006		2008	
	Male	Female	Male	Female	Male	Female
Having health insurance (above 5 years old)	32.5	29.1	40.5	39.6	53.5	52.5
Annual outpatient contact	0.90	1.21	1.13	1.44	0.98	1.37
Annual inpatient contact	0.09	0.10	0.08	0.10	0.08	0.10

Source: Author's estimation from VHLSSs

Equality in work and employment is an important condition for gender equality. Women will be more empowered when they have more economic independence. The State, organizations and enterprises have tried to create more employments for women. The number of female directors of enterprises has been increasing. Women accounted for around 49 percent of new labors annually. Table 3 shows that the proportion of working women is around 4 percentage point lower than the proportion of working men. The average annual working hours of women is also lower than that of men. For example, the annual working hours was 1453 and 1565 for women and men in 2008, respectively. Women received less payment than men. In 2008, the average wage per hour was 10 and 10.8 thousand VND for women and men, respectively.

Table 3: Main employment and wage of people in working age
(Male: 15-60, Female: 15-55)

Highest education degrees	2004		2006		2008	
	Male	Female	Male	Female	Male	Female
Ratio of working (%)	93.6	89.7	92.7	89.7	92.6	88.6
Number of annual working hours	1533	1493	1557	1496	1565	1453
Average annual wage (thousand VND)	10697	9475	14368	12456	21394	18702
Average wage per hour (thousand VND)	5.7	5.1	7.3	6.6	10.8	10.0

Source: Author's estimation from VHLSSs

Table 4 examines the occupational structures of men and women. The ratio of people working as managers, professionals, clerks, and office staffs is similar between men and women. However, women are more likely to have simple and agricultural works. On the contrary, they have lower ratios of skilled workers than men. In 2008, the ratio of skilled employment was 9.8 percent and 20.3 percent for women and men, respectively.

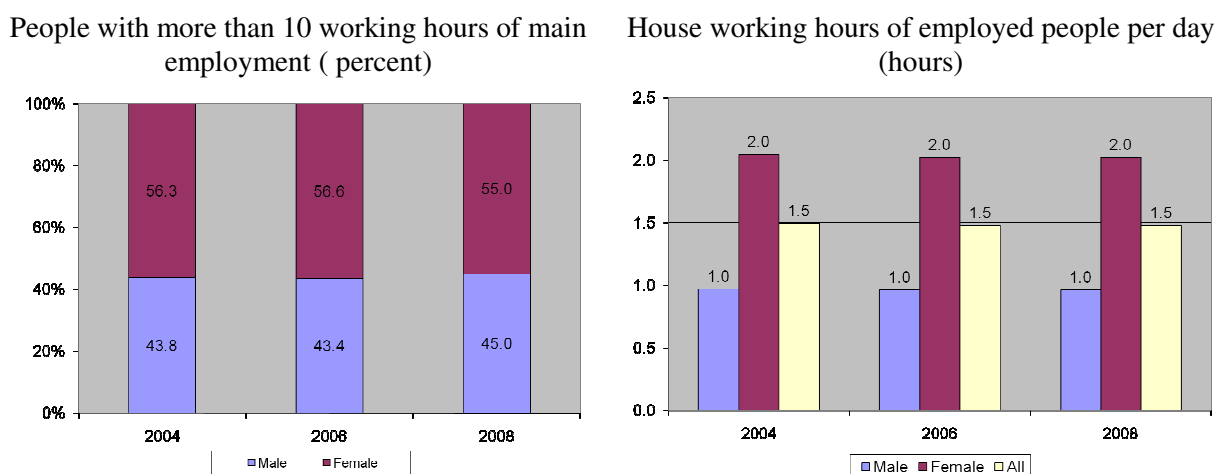
Table 4: Occupational structure of main employment (%)

Highest education degrees	2004		2006		2008	
	Male	Female	Male	Female	Male	Female
Manager, professionals, clerks, and officers	11.5	11.6	12.4	13.4	14.1	14.7
Agricultural workers	52.7	57.4	50.1	54.3	48.8	53.3
Skilled workers	16.0	8.2	18.2	9.3	20.3	9.8
Simple workers	19.9	22.9	19.3	23.0	16.9	22.2

Source: Author's estimation from VHLSSs

Although, women have lower average working hours than men, the ratio of workers with more than 10 working hours per day is higher for women than for men. Figure 2 shows that women accounted for 55 percent of people with more than 10 working hours of main employment in 2008 (men accounted for 45 percent).

Figure 2: Working burdens



Source: Author's estimation from VHLSSs

In addition, women also have to spend more time on house works than men. Figure 2 estimates the average daily hours for house work for employed men and women. The time for house works of women was two times as much as that of men. The difference was

almost unchanged during the period 2004-2008. Women are also those who are mainly responsible in looking after children. According to a research of Vietnam Institute of Social Science, among those who mainly take care of children, wives account for 56 percent, husbands account for 3 percent, and both wives and husbands account for 41 percent (Bui, 2007). High working hours and burdens for delivery are challenges for women to ensure health and works.

Finally, gender-based prejudice in favor of men still prevails in Vietnam, and the gender bias leads to a large number of other unfavorable issues for women. In families, men are the most powerful person. According to the 2008 VHLSS, 74 percent of household heads are man. Family violence, mostly violence against women and children is a serious problem in Vietnam, especially in rural, mountainous and remote areas. During the period 2000-2005, courts settled 352047 cases on family and marriage. Among reasons for divorce, family violence accounted for 53.1% (Lan and Thuy, 2006). 90% victims of family violence are women, while near 10% victims are children and elderly (Thai, 2007). The trafficking of women and children tends to increase recently. There were about 6680 trafficked women and children, and around 21000 women who were absent for long time and considered to be trafficked during the period 1998-2007.³ In addition, around 10711 Vietnamese women went abroad illegally to get married with foreigners during the period 1998-2006 (Khang, 2006). The number of female sex workers is estimated at 30000, but the real number can be much higher (Do, 2008). More seriously, many couples have tried to give birth to baby boys rather than baby girls. As a result, the difference between the number of boys and the number of girls is now very high. According to the recent Population Census in 2009, every 100 girls born, there were 111 boys born.⁴

4. Regression analysis

We can use regressions to examine differences in welfare indicators between men and women. Assume welfare indicators, which include education, health care utilization, wage, and working hours, have the following function:

$$Y = \alpha + X\beta + W\gamma + WX\theta + \varepsilon, \quad (1)$$

³ “Trafficking of women and children: how to prevent?”, People Police Newspaper, July 11, 2008.

⁴ The normal rate should be 103-107 boys together with 100 girls.

where Y is an welfare indicator, X is a vector of control variables including characteristics of individuals, urban and regional dummy variables, and dummy variables of years. W is the gender variable of interest, which is equal 1 for women and 0 for men.

We use appropriate models for different types of dependent variables such as Logit (for binary variable), Poisson (for count variable), Tobit (for limited variables) and OLS regressions.⁵ It should be noted that several models are non-linear, and the coefficient of the variable ‘female’ is not a direct estimate of the difference in mean dependent variables between women and men.⁶ To measure the effect of the variable ‘female’, we use the parameter of average treatment effect (ATE):

$$ATE = E(Y_{Female=1}) - E(Y_{Female=0}). \quad (2)$$

For convenience, ATE is estimated as follows:⁷

$$\hat{ATE} = G(\hat{\alpha} + \bar{x}\hat{\beta} + \hat{\gamma} + \bar{x}\hat{\theta}) - G(\hat{\alpha} + \bar{x}\hat{\beta}), \quad (3)$$

where G is a non-linear function such as a logistic function of Y depending the model used in regression, $\hat{\alpha}, \hat{\beta}, \hat{\gamma}, \hat{\theta}$ are the estimated parameter in equation (1), \bar{x} is mean value of explanatory variables.

In this paper, we will different specifications of equation (1): model 1 without control variables; model 2 with control variables but without interaction between the gender variable and control variables, and model 3 with control variables and the interaction variables. There are several advantages of using regressions in gender analysis. Firstly, we can examine whether there is still a difference in welfare indicators between men and women once observed variables are controlled. Secondly, by using interactions between the gender variable and control variables, we can test whether the gender gap in welfare indicators differs for different groups of people.

Tables from 5 to 10 present the regressions of education, literacy, health insurance, healthcare utilization and working for people using pooled data of VHLSSs 2004, 2006 and 2008. The full regressions are presented in Tables in Appendix. The explanatory variables include gender (female), age, ethnic minorities (yes=1), education, urban, regional dummy variables, per capita income (which is equal to total household income divided by household size), dummy variables of years.

Table 5 shows that there are no statistically significant differences in primary and lower-secondary education enrolment between girls and boys for the whole sample as well as for different people groups. The point estimates are very small.

⁵ See economics textbooks such as Wooldridge (2001) and Green (2003) for presentation of these regression models.

⁶ This difference is called the average treatment effect in econometrics. In general, the effect of an explanatory variable on dependent variable can be measured by the average partial effect.

⁷ We use Stata to run regressions and estimate the marginal treatment effect.

Table 5: Regressions of education enrollment

Explanatory variables	Logit regressions of education enrollment: sample of children aged between 6 and 10			Logit regressions of education enrollment: sample of children aged between 11 and 14		
	Model 1	Model 3	Model 4	Model 1	Model 3	Model 4
Female (yes = 1)	-0.012 [0.146]	-0.03 [0.150]	0.486 [1.093]	0.063 [0.080]	0.082 [0.085]	-0.261 [0.973]
Age*female			0.012 [0.116]			-0.001 [0.074]
Urban*female			0.655 [0.550]			-0.245 [0.288]
Ethnic minorities*female			-0.362 [0.345]			-0.018 [0.191]
Year 2006*female			0.009 [0.367]			0.223 [0.170]
Year 2008*female			-0.409 [0.416]			0.14 [0.208]
Per capita income*female			-0.104 [0.137]			0.058 [0.036]
Control variables	No	Yes	Yes	No	Yes	Yes
Observations	8129	8129	8129	10973	10973	10973
R-squared	0	0.12	0.12	0	0.14	0.14

Robust standard errors in brackets

** significant at 10%; ** significant at 5%; *** significant at 1%*

Source: Author's estimation from VHLSSs

However, girls are more likely to attend the upper-secondary school than boys, and this difference tends to be large overtime (Table 6). In model 2, the estimate of 'female' is 0.127, and the average treatment effect is estimated at around 0.027. It means that, on average, girls have the proportion of school enrolment 2.7 percentage points higher than boys. For ethnic minorities, boys have a higher proportion of school enrolment than girls, but this difference is not statistically significant.

Table 6 also presents regressions of probability of having a diploma of upper-secondary education or post-secondary education including college and university degree for people above 17 years old. As expected, men have higher education than women. Several interactions are statistically significant, and they suggest that the difference in high education tends to be larger for old people and rural people. Similar findings are also found for the proportion of literacy (Table 7). Men have a higher proportion of literacy than women, and this literacy inequality is larger for old people and ethnic minorities.

Table 6: Regressions of education enrollment

Explanatory variables	Logit regressions of education enrollment: sample of people aged between 15 and 17			Logit regressions of completion upper-secondary school and above: sample of people above 17		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Female (yes = 1)	0.127** [0.052]	0.154*** [0.055]	-0.264 [0.966]	-0.432*** [0.018]	-0.472*** [0.021]	0.552*** [0.065]
Age*female			0.003 [0.060]			-0.031*** [0.002]
Urban*female			0.012 [0.150]			0.280*** [0.048]
Ethnic minorities*female			-0.337** [0.141]			0.098 [0.067]
Year 2006*female			0.362*** [0.120]			0.067* [0.036]
Year 2008*female			0.540*** [0.135]			0.072 [0.044]
Per capita income*female			0.021 [0.017]			-0.003 [0.004]
Control variables	No	Yes	Yes	No	Yes	Yes
Observations	8959	8959	8959	78985	78985	78985
R-squared	0	0.09	0.09	0.01	0.21	0.21

Robust standard errors in brackets

** significant at 10%; ** significant at 5%; *** significant at 1%*

Source: Author's estimation from VHLSSs

Men are slightly more likely than women to have health insurance. However, once observed variables are controlled, men and women are equally likely to have health insurance. The positive interactions between the variable 'female' and year dummies show that there has been an increase in women having health insurance compared to men over the period 2004-2008.

Table 7: Regressions of literacy and health insurance

Explanatory variables	Logit regressions of literacy: sample of people above 17			Logit regressions of health insurance: sample of people above 5		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Female (yes = 1)	-0.983*** [0.037]	-1.038*** [0.044]	1.559*** [0.179]	-0.070*** [0.013]	-0.006 [0.013]	-0.024 [0.036]
Age*female			-0.048*** [0.003]			-0.003*** [0.001]
Urban*female			-0.117 [0.132]			0.023 [0.032]
Ethnic minorities*female			-0.485*** [0.099]			-0.001 [0.033]
Year 2006*female			0.04			0.142***

Explanatory variables	Logit regressions of literacy: sample of people above 17			Logit regressions of health insurance: sample of people above 5		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Year 2008*female			[0.067]			0.154*** [0.028]
Per capita income*female			-0.022 [0.020]			0.002 [0.002]
Control variables	No	Yes	Yes	No	Yes	Yes
Observations	76539	52514	52514	108696	108688	108688
R-squared	0.03	0.26	0.28	0	0.09	0.09

Robust standard errors in brackets

** significant at 10%; ** significant at 5%; *** significant at 1%*

Source: Author's estimation from VHLSSs

Table 8 shows that women are more likely than men in using both outpatient and inpatient health care services. When observed characteristics are controlled, women still visit health care center more often than men. It is interesting that the difference in outpatient health care utilization between men and women is larger for old people, high income people and ethnic minority people.

Table 8: Regressions of health care utilization

Explanatory variables	Poisson regressions of outpatient annual contact: all people			Poisson regressions of inpatient annual contact: all people		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Female (yes = 1)	0.347*** [0.019]	0.153*** [0.016]	0.093** [0.038]	0.225*** [0.033]	0.072** [0.030]	0.263*** [0.075]
Age*female			0.001* [0.001]			-0.006*** [0.001]
Urban*female			0.017 [0.036]			0.02 [0.079]
Ethnic minorities*female			0.074* [0.042]			0.072 [0.075]
Year 2006*female			-0.073** [0.035]			-0.077 [0.066]
Year 2008*female			0.019 [0.038]			-0.028 [0.076]
Per capita income*female			0.002** [0.001]			0.006* [0.003]
Control variables	No	Yes	Yes	No	Yes	Yes
Observations	108696	117753	117753	108696	117753	117753

Robust standard errors in brackets

** significant at 10%; ** significant at 5%; *** significant at 1%*

Source: Author's estimation from VHLSSs

In many countries especially developing ones, there is a gender inequality which favors men in the labor market. Women are less likely than men in having wage employment (Table 9). The difference is almost unchanged after other observed characteristics are controlled. The coefficient is -0.639, meaning that the proportion of women having wage employment is around 10 percentage points lower than the proportion for the men. As expected, this gender difference is larger for old people, but smaller for urban people and people with high income. Women have lower wage than men, and this wage gap is larger for old people, rural and ethnic minority people. The wage gap between women and men did not decrease during the period 2004-2008.

Table 9: Regressions of wage

Explanatory variables	Logit regressions of wage earner: sample of people above 14			Tobit regressions of wage per hour: sample of people above 14		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Female (yes = 1)	-0.661*** [0.019]	-0.639*** [0.022]	-0.422*** [0.053]	-10.37*** [0.618]	-8.348*** [0.502]	-3.843*** [0.629]
Age*female			-0.012*** [0.001]			-0.129*** [0.016]
Urban*female			0.221*** [0.049]			1.789*** [0.678]
Ethnic minorities*female			0.078 [0.070]			1.454* [0.780]
Year 2006*female			0.051 [0.039]			0.285 [0.448]
Year 2008*female			0.009 [0.045]			-0.576 [0.586]
Per capita income*female			0.010*** [0.003]			-0.052 [0.060]
Control variables	No	Yes	Yes	No	Yes	Yes
Observations	87944	87938	87938	87944	87938	87938
R-squared	0.02	0.16	0.17	0.01	0.08	0.08

Robust standard errors in brackets

** significant at 10%; ** significant at 5%; *** significant at 1%*

Source: Author's estimation from VHLSSs

Working hours, both income and housework hours, are examined in Table 10. Women have a lower number of working hours for income than men even after the education and other observed variables are controlled. The difference tends to be higher for older people, and urban people. The gender gap in working hours was higher in 2008 than 2004. It is interesting that the gender difference in working hours is lower for ethnic minorities than for Kinh and Hoa.

Women are more likely to have to do housework than men even after the working hours for income are controlled for. Although there is a consensus that gender inequality

is higher in rural areas than urban areas, Table 10 shows an opposite direction in housework. The difference in daily housework hours between men and women is higher in urban areas than in rural areas, and also higher for Kinh/Hoa than for ethnic minorities.

Table 10: Regressions of working hours and housework hours

Explanatory variables	OLS regressions of annual working hours: sample of people above 14			OLS regressions of daily housework hours: sample of people above 14		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Female (yes = 1)	-193.2*** [11.644]	-132.6*** [11.665]	249.36*** [34.869]	1.031*** [0.012]	1.024*** [0.012]	1.068*** [0.030]
Age*female			-8.916*** [0.730]			-0.002*** [0.001]
Urban*female			-56.412* [30.053]			0.317*** [0.029]
Ethnic minorities*female			60.278** [25.510]			-0.303*** [0.026]
Year 2006*female			-16.532 [19.875]			-0.036* [0.019]
Year 2008*female			-67.12*** [22.945]			-0.035 [0.024]
Per capita income*female			-0.372 [1.215]			0.002* [0.001]
Annual working hours				0.011* [0.006]	-0.003 [0.006]	-0.002 [0.006]
Control variables	No	Yes	Yes	No	Yes	Yes
Observations	87944	87938	87938	87944	87938	87938
R-squared	0.00	0.00	0.00	0.16	0.17	0.18

Robust standard errors in brackets

** significant at 10%; ** significant at 5%; *** significant at 1%*

Source: Author's estimation from VHLSSs

5. Conclusions

Vietnam has achieved success in promoting gender equality and empowering women. The most successful achievements are removal of disparities in educational access between boys and girls. There are no statistically significant differences in primary and lower-secondary education enrolment between girls and boys for the whole country as well as for different people groups such as urban/rural, ethnic minority and Kinh/Hoa people. Women are more likely than men in using outpatient and inpatient health care services. When observed characteristics are controlled, women still visit health care center more often than men. The difference in outpatient health care utilization between men and women is larger for old people, high income people and ethnic minority people.

There might be two possible reasons for the improvement in gender equality in child education and health care utilization. The first reason is the implementation of the government's policies in gender equality. The government has committed to the MDG on universal primary school for children and the MDG on gender inequality. Gender experts in United Nations have agreed that Vietnam has a relatively strong legal framework on gender.⁸ Two Laws related to gender issues were approved recently. The first is Law on gender equality which was approved by National Assembly on November 29, 2006. According to this Law, women are encouraged to work and supported with credit and agricultural extension. Enterprises which use more female labors will receive preferential tax and finance. The second law is Family Violence Prevention Law which was approved by National Assembly on November 21, 2007. This law stipulates family violence prevention, the protection and help to victims of family violence. In addition, Law on Land and Law on Marriage and Family also have regulations to ensure gender equality.

The second reason is an increase in income and changes in people's awareness on gender equality. Households with higher income can afford education and health care services for all the household members.

However, there remains gender inequality in many fields in Vietnam. For people above 14 years old, men still have higher education and a higher rate of literacy than women. Gender inequality in employment is still persistent. Women are less likely than men in having wage employment. Women have lower wage than men, and this wage gap did not decrease during the period 2004-2008. Women are more likely to have to do housework than men even after the working hours for income are controlled for. It means that women have more work burden than men. The difference in daily housework hours between men and women is higher in urban areas than in rural areas, and also higher for Kinh/Hoa than for ethnic minorities.

⁸ "Raising awareness of gender", Vietnam News Agency, February 5, 2007.

References

- Appiah, E.N. and W. McMahon (2002), “The Social Outcomes of Education and Feedbacks on Growth in Africa.” *Journal of Development Studies* 38: 27-68.
- Bui, Thi Thu Ha (2007), “Gender and Factors Affecting Women’s Health”, Unpublished Paper.
- Costa Joana, Elydia Silva, and Fábio Vaz (2009), “The Role of Gender Inequalities in Explaining Income Growth, Poverty And Inequality: Evidence from Latin American Countries”, Working Paper number 52 April, 2009, International Policy Centre for Inclusive Growth, United Nations Development Programme
- Do Minh (2008), “It is Impossible to Estimate the Number of Prostitutes”, Vietnamnet, March 11, 2008.
- Dollar, D. and R. Gatti. 1999. “Gender Inequality, Income and Growth: Are Good Times good for Women?”, Unpublished Paper. Washington, The World Bank.
- Gia Khang (2006), “Nearly 11 Thousand Women Went abroad Illegally for Marriage”, Vietnamnet, June 10, 2006.
- Greene W. H. (2003). *Econometric Analysis*. Prentice Hall Press, Firth Edition, 2003.
- Lan, Huong and Thuy Duong (2006), “Family Violence: Lack of Legal Regulations”, Lives and Law Newspaper, October 10, 2006.
- Klasen, S. (2002), “Low Schooling for Girls, Slower Growth for All?” *World Bank Economic Review* 16 (3), 345–373.
- Klasen, S. and F. Lamanna (2003), “The Impact of Gender Inequality in Education and Employment on Economic Growth in the Middle East and North Africa”, Background paper for *Women in the Public Sphere*, Washington, DC, World Bank.
- Le Anh Tu (2006), “Gender Dimensions of Viet Nam’s Comprehensive Macroeconomic and Structural Reform Policies”, Occasional Paper 14, United Nations Research Institute For Social Development.
- MPI (2008), “Viet Nam Continues to Achieve the Millennium Development Goals”, Ministry of Planning and Investment of Vietnam.
- People Police Newspaper (2008), “Trafficking of Women and Children: How to Prevent?”, People Police Newspaper, July 11, 2008.
- Quisumbing, A. R. (1996), “Male-Female Differences in Agricultural Productivity: Methodological Issues and Empirical Evidence”, *World Development* 24 (10): 1579–1595.
- Thai, Kieu Ngan (2007), “Prevention of Family Violence”, People Newspaper, August 12, 2007.

Udry, C. (1996), “Gender, Agricultural Production, and the Theory of The Household”, *Journal of Political Economy* 104 (5): 1010–1046.

United Nations (2008), “Human Development Report 2007/2008: Fighting Climate Change: Human Solidarity In a Divided World”, The United Nations.

Wells Melissa (2005), “Gender and Policy Consultant”, Report for Asian Development Bank.

Wooldridge J. M. (2001). *Econometric Analysis of Cross Section and Panel Data*. The MIT Press, Cambridge, Massachusetts London, England.

World Bank (2007), “World Development Report: Development and the Next Generation”, the World Bank.

Appendix

Table A.1. Regressions of education enrollment

Explanatory variables	Logit regressions of education enrollment: sample of children aged between 6 and			Logit regressions of education enrollment: sample of children aged between 11 and		
	10			14		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Female (yes = 1)	-0.012 [0.146]	-0.03 [0.150]	0.486 [1.093]	0.063 [0.080]	0.082 [0.085]	-0.261 [0.973]
Age*female			0.012 [0.116]			-0.001 [0.074]
Urban*female			0.655 [0.550]			-0.245 [0.288]
Ethnic minorities*female			-0.362 [0.345]			-0.018 [0.191]
Year 2006*female			0.009 [0.367]			0.223 [0.170]
Year 2008*female			-0.409 [0.416]			0.14 [0.208]
Per capita income*female			-0.104 [0.137]			0.058 [0.036]
Age		0.067 [0.060]	0.059 [0.078]		-0.568*** [0.036]	-0.569*** [0.051]
Ethnic minorities		-1.274*** [0.220]	-1.100*** [0.282]		-0.706*** [0.138]	-0.697*** [0.170]
Urban		0.14 [0.321]	-0.129 [0.429]		0.185 [0.149]	0.302* [0.176]
Red River Delta	Omitted					
North East		-0.294 [0.465]	-0.294 [0.468]		0.16 [0.239]	0.167 [0.239]
North West		-0.865* [0.481]	-0.868* [0.482]		-0.690*** [0.257]	-0.686*** [0.258]
North Central Coast		-0.514 [0.451]	-0.518 [0.452]		-0.496** [0.209]	-0.492** [0.209]
South Central Coast		-0.098 [0.563]	-0.103 [0.565]		-0.396* [0.231]	-0.383* [0.231]
Central Highlands		-1.030** [0.459]	-1.016** [0.462]		-0.829*** [0.241]	-0.817*** [0.242]
South East		-1.481*** [0.458]	-1.492*** [0.460]		-1.584*** [0.208]	-1.593*** [0.209]
Mekong River Delta		-1.715*** [0.412]	-1.713*** [0.414]		-1.747*** [0.176]	-1.750*** [0.177]
Per capita income		0.195*** [0.067]	0.250** [0.118]		0.163*** [0.020]	0.139*** [0.026]
Year 2006 (yes=1)		0.19 [0.180]	0.188 [0.264]		-0.194** [0.093]	-0.305** [0.126]
Year 2008 (yes=1)		-0.261 [0.213]	-0.06 [0.334]		-0.442*** [0.111]	-0.515*** [0.145]
Constant	3.519*** [0.115]	3.337*** [0.642]	3.103*** [0.745]	2.347*** [0.060]	9.925*** [0.502]	10.092*** [0.695]
Observations	8129	8129	8129	10973	10973	10973
R-squared	0.00	0.12	0.12	0.00	0.14	0.14

Robust standard errors in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

Source: Author's estimation from VHLSSs

Note: these above notes are also applied for the following tables

Table A.2. Regressions of education enrollment

Explanatory variables	Logit regressions of education enrollment: sample of people aged between 15 and 17			Logit regressions of completion upper-secondary school and above: sample of people above 17		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Female (yes = 1)	0.127** [0.052]	0.154*** [0.055]	-0.264 [0.966]	-0.432*** [0.018]	-0.472*** [0.021]	0.552*** [0.065]
Age*female			0.003 [0.060]			-0.031*** [0.002]
Urban*female			0.012 [0.150]			0.280*** [0.048]
Ethnic minorities*female			-0.337** [0.141]			0.098 [0.067]
Year 2006*female			0.362*** [0.120]			0.067* [0.036]
Year 2008*female			0.540*** [0.135]			0.072 [0.044]
Per capita income*female			0.021 [0.017]			-0.003 [0.004]
Age		-0.527*** [0.029]	-0.529*** [0.040]		-0.044*** [0.001]	-0.030*** [0.001]
Ethnic minorities		-0.342*** [0.093]	-0.184 [0.116]		-0.901*** [0.074]	-0.946*** [0.077]
Urban		0.476*** [0.083]	0.476*** [0.106]		1.185*** [0.048]	1.057*** [0.052]
Red River Delta	Omitted					
North East		0.02 [0.112]	0.018 [0.113]		0.007 [0.064]	0.005 [0.064]
North West		-0.153 [0.162]	-0.153 [0.162]		-0.197* [0.119]	-0.193 [0.119]
North Central Coast		0.151 [0.118]	0.149 [0.119]		-0.1 [0.068]	-0.098 [0.069]
South Central Coast		-0.092 [0.117]	-0.091 [0.117]		-0.636*** [0.067]	-0.636*** [0.067]
Central Highlands		-0.304** [0.140]	-0.310** [0.140]		-0.882*** [0.086]	-0.885*** [0.085]
South East		-0.589*** [0.116]	-0.602*** [0.116]		-1.046*** [0.073]	-1.050*** [0.074]
Mekong River Delta		-0.975*** [0.092]	-0.992*** [0.092]		-1.563*** [0.062]	-1.563*** [0.063]
Per capita income		0.082*** [0.009]	0.073*** [0.012]		0.075*** [0.005]	0.078*** [0.006]
Year 2006 (yes=1)		-0.128** [0.060]	-0.297*** [0.082]		-0.044 [0.029]	-0.073** [0.034]
Year 2008 (yes=1)		-0.302*** [0.069]	-0.555*** [0.095]		-0.100*** [0.038]	-0.134*** [0.045]
Constant	0.707*** [0.038]	9.010*** [0.472]	9.216*** [0.647]	-0.714*** [0.024]	0.617*** [0.059]	0.152** [0.065]
Observations	8959	8959	8959	78985	78985	78985
R-squared	0.00	0.09	0.09	0.01	0.21	0.21

Table A.3: Regressions of literacy and health insurance

Explanatory variables	Logit regressions of literacy: sample of people above 17			Logit regressions of having health insurance: sample of people above 5		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Female (yes = 1)	-0.983*** [0.037]	-1.038*** [0.044]	1.559*** [0.179]	-0.070*** [0.013]	-0.006 [0.013]	-0.024 [0.036]
Age*female			-0.048*** [0.003]			-0.003*** [0.001]
Urban*female			-0.117 [0.132]			0.023 [0.032]
Ethnic minorities*female			-0.485*** [0.099]			-0.001 [0.033]
Year 2006*female			0.04 [0.067]			0.142*** [0.028]
Year 2008*female						0.154*** [0.030]
Per capita income*female			-0.022 [0.020]			0.002 [0.002]
Age		-0.056*** [0.001]	-0.024*** [0.002]		-0.022*** [0.001]	-0.020*** [0.001]
Ethnic minorities		-1.821*** [0.089]	-1.562*** [0.105]		0.079 [0.060]	0.078 [0.062]
Urban		0.414*** [0.073]	0.511*** [0.125]		0.399*** [0.037]	0.389*** [0.041]
Red River Delta	Omitted					
North East		0.161 [0.117]	0.148 [0.120]		0.155*** [0.054]	0.156*** [0.054]
North West		-0.703*** [0.176]	-0.725*** [0.176]		0.177* [0.091]	0.177* [0.091]
North Central Coast		-0.167 [0.110]	-0.186 [0.114]		0.191*** [0.058]	0.191*** [0.058]
South Central Coast		-0.529*** [0.093]	-0.558*** [0.096]		0.200*** [0.056]	0.200*** [0.056]
Central Highlands		-1.019*** [0.117]	-1.069*** [0.120]		-0.063 [0.078]	-0.064 [0.078]
South East		-1.018*** [0.098]	-1.057*** [0.100]		-0.222*** [0.056]	-0.225*** [0.056]
Mekong River Delta		-1.167*** [0.077]	-1.217*** [0.080]		-0.520*** [0.046]	-0.523*** [0.046]
Per capita income		0.164*** [0.011]	0.183*** [0.019]		0.005** [0.003]	0.004* [0.003]
Year 2006 (yes=1)		-0.217*** [0.038]	-0.247*** [0.061]		0.445*** [0.028]	0.374*** [0.031]
Year 2008 (yes=1)					1.017*** [0.031]	0.940*** [0.035]
No education degree	Omitted					
Primary school degree					-0.330*** [0.023]	-0.339*** [0.023]
Lower secondary school degree					-0.406*** [0.027]	-0.417*** [0.028]
Upper secondary school degree					-0.193*** [0.037]	-0.205*** [0.038]
Technical degree					0.544*** [0.044]	0.528*** [0.045]
Post secondary degree					1.726*** [0.071]	1.706*** [0.071]
Constant	3.457*** [0.043]	5.728*** [0.125]	4.079*** [0.161]	-0.308*** [0.017]	-0.123*** [0.047]	-0.108** [0.049]
Observations	76539	52514	52514	108696	108688	108688
R-squared	0.03	0.26	0.28	0.00	0.09	0.09

Table A.4: Regressions of health care utilization

Explanatory variables	Poisson regressions of outpatient annual contact: all people			Poisson regressions of inpatient annual contact: all people		
	Model 1	Model 3	Model 4	Model 1	Model 3	Model 4
Female (yes = 1)	0.347*** [0.019]	0.153*** [0.016]	0.093** [0.038]	0.225*** [0.033]	0.072** [0.030]	0.263*** [0.075]
Age*female			0.001* [0.001]			-0.006*** [0.001]
Urban*female			0.017 [0.036]			0.02 [0.079]
Ethnic minorities*female			0.074* [0.042]			0.072 [0.075]
Year 2006*female			-0.073** [0.035]			-0.077 [0.066]
Year 2008*female			0.019 [0.038]			-0.028 [0.076]
Per capita income*female			0.002** [0.001]			0.006* [0.003]
Age		0.013*** [0.000]	0.012*** [0.001]		0.016*** [0.001]	0.019*** [0.001]
Ethnic minorities		-0.326*** [0.041]	-0.368*** [0.047]		0.024 [0.060]	-0.022 [0.074]
Urban		0.057* [0.032]	0.046 [0.040]		-0.048 [0.048]	-0.055 [0.057]
Red River Delta	Omitted					
North East		-0.266*** [0.044]	-0.266*** [0.044]		0.064 [0.057]	0.065 [0.057]
North West		-0.268*** [0.065]	-0.268*** [0.065]		0.324*** [0.121]	0.324*** [0.120]
North Central Coast		-0.309*** [0.051]	-0.309*** [0.051]		0.091 [0.057]	0.091 [0.057]
South Central Coast		0.177*** [0.049]	0.178*** [0.049]		0.220*** [0.064]	0.218*** [0.063]
Central Highlands		0.328*** [0.050]	0.328*** [0.050]		0.066 [0.076]	0.064 [0.076]
South East		0.565*** [0.044]	0.565*** [0.045]		-0.158** [0.073]	-0.162** [0.072]
Mekong River Delta		0.774*** [0.039]	0.775*** [0.039]		0.021 [0.058]	0.016 [0.058]
Per capita income		0.003*** [0.001]	0.002** [0.001]		0.001 [0.002]	-0.003 [0.003]
Year 2006 (yes=1)		0 [0.026]	0.042 [0.036]		-0.257*** [0.039]	-0.212*** [0.053]
Year 2008 (yes=1)		-0.106*** [0.029]	-0.118*** [0.037]		-0.286*** [0.045]	-0.267*** [0.056]
No education degree	Omitted					
Primary school degree		-0.214*** [0.025]	-0.211*** [0.025]		-0.159*** [0.042]	-0.181*** [0.042]
Lower secondary school degree		-0.271*** [0.028]	-0.268*** [0.028]		-0.084* [0.044]	-0.108** [0.045]
Upper secondary school degree		-0.444*** [0.040]	-0.441*** [0.040]		-0.219*** [0.068]	-0.244*** [0.068]
Technical degree		-0.226*** [0.041]	-0.221*** [0.041]		-0.065 [0.059]	-0.094 [0.059]
Post secondary degree		-0.277*** [0.059]	-0.270*** [0.059]		-0.115 [0.089]	-0.143 [0.088]
Sick in the past 4 weeks		1.316*** [0.023]	1.316*** [0.023]		1.214*** [0.035]	1.214*** [0.035]
Having health insurance		0.260*** [0.021]	0.260*** [0.021]		0.493*** [0.034]	0.490*** [0.034]
Constant	-0.064*** [0.023]	-1.007*** [0.045]	-0.976*** [0.049]	-2.516*** [0.026]	-3.336*** [0.063]	-3.421*** [0.075]
Observations	108696	117753	117753	108696	117753	117753

Table A.5: Regressions of wage

Explanatory variables	Logit regressions of wage earner: sample of people above 14			Tobit regressions of wage: sample of people above 14		
	Model 1	Model 3	Model 4	Model 1	Model 3	Model 4
Female (yes = 1)	-0.661*** [0.019]	-0.639*** [0.022]	-0.422*** [0.053]	-10.370*** [0.618]	-8.348*** [0.502]	-3.843*** [0.629]
Age*female			-0.012*** [0.001]			-0.129*** [0.016]
Urban*female			0.221*** [0.049]			1.789*** [0.678]
Ethnic minorities*female			0.078 [0.070]			1.454* [0.780]
Year 2006*female			0.051 [0.039]			0.285 [0.448]
Year 2008*female			0.009 [0.045]			-0.576 [0.586]
Per capita income*female			0.010*** [0.003]			-0.052 [0.060]
Age		-0.030*** [0.001]	-0.026*** [0.001]		-0.303*** [0.023]	-0.249*** [0.019]
Ethnic minorities		-0.582*** [0.071]	-0.625*** [0.074]		-5.796*** [0.733]	-6.475*** [0.786]
Urban		0.353*** [0.036]	0.257*** [0.043]		4.909*** [0.430]	4.153*** [0.559]
Red River Delta	Omitted					
North East		-0.520*** [0.058]	-0.521*** [0.058]		-4.997*** [0.685]	-4.998*** [0.684]
North West		-0.877*** [0.107]	-0.880*** [0.107]		-8.691*** [1.176]	-8.701*** [1.171]
North Central Coast		-0.673*** [0.054]	-0.676*** [0.054]		-6.976*** [0.596]	-6.982*** [0.597]
South Central Coast		-0.059 [0.055]	-0.062 [0.055]		-0.024 [0.593]	-0.054 [0.593]
Central Highlands		-0.592*** [0.075]	-0.596*** [0.075]		-5.392*** [0.880]	-5.440*** [0.880]
South East		0.353*** [0.053]	0.343*** [0.053]		6.491*** [0.667]	6.444*** [0.669]
Mekong River Delta		0.056 [0.047]	0.046 [0.047]		0.605 [0.532]	0.525 [0.534]
Per capita income		-0.013*** [0.003]	-0.018*** [0.004]		0.209* [0.120]	0.233* [0.142]
Year 2006 (yes=1)		0.100*** [0.026]	0.081** [0.031]		1.873*** [0.352]	1.757*** [0.443]
Year 2008 (yes=1)		0.171*** [0.030]	0.170*** [0.038]		4.329*** [0.582]	4.599*** [0.732]
No education degree	Omitted					
Primary school degree		-0.038 [0.038]	-0.067* [0.038]		0.463 [0.446]	0.163 [0.450]
Lower secondary school degree		-0.350*** [0.045]	-0.385*** [0.045]		-2.164*** [0.684]	-2.549*** [0.694]
Upper secondary school degree		-0.275*** [0.052]	-0.315*** [0.052]		-0.712 [0.919]	-1.167 [0.931]
Technical degree		1.489*** [0.050]	1.449*** [0.051]		18.585*** [0.682]	18.165*** [0.684]
Post secondary degree		2.498*** [0.070]	2.452*** [0.070]		33.797*** [1.083]	33.311*** [1.079]
Sick in the past 4 weeks		-0.241*** [0.034]	-0.240*** [0.034]		-3.299*** [0.409]	-3.271*** [0.410]
Constant	-0.778*** [0.018]	0.258*** [0.067]	0.207*** [0.068]	-14.532*** [1.292]	-7.420*** [1.053]	-8.978*** [1.222]
Observations	87944	87938	87938	87944	87938	87938
R-squared	0.02	0.16	0.17	0.01	0.08	0.08

Table A.6: Regressions of working hours and housework hours

Explanatory variables	OLS regressions of annual working hours: sample of people above 14			OLS regressions of daily housework hours: sample of people above 14		
	Model 1	Model 3	Model 4	Model 1	Model 3	Model 4
Female (yes = 1)	-193.16*** [11.644]	-132.59*** [11.665]	249.365*** [34.869]	1.031*** [0.012]	1.024*** [0.012]	1.068*** [0.030]
Age*female			-8.916*** [0.730]			-0.002*** [0.001]
Urban*female			-56.412* [30.053]			0.317*** [0.029]
Ethnic minorities*female			60.278** [25.510]			-0.303*** [0.026]
Year 2006*female			-16.532 [19.875]			-0.036* [0.019]
Year 2008*female			-67.127*** [22.945]			-0.035 [0.024]
Per capita income*female			-0.372 [1.215]			0.002* [0.001]
Age		-3.032*** [0.530]	1.397** [0.650]		0.007*** [0.000]	0.008*** [0.000]
Annual working hours				0.011* [0.006]	-0.003 [0.006]	-0.002 [0.006]
Ethnic minorities		66.850*** [23.514]	27.498 [26.266]		0.029 [0.024]	0.180*** [0.026]
Urban		-33.920* [18.623]	-1.776 [24.384]		0.056*** [0.019]	-0.111*** [0.020]
Red River Delta	Omitted					
North East		115.018*** [25.310]	113.711*** [25.239]		0.009 [0.025]	0.009 [0.025]
North West		149.435*** [42.049]	144.489*** [41.836]		0.048 [0.042]	0.047 [0.042]
North Central Coast		-80.632*** [24.626]	-81.514*** [24.554]		0.064*** [0.024]	0.064*** [0.025]
South Central Coast		-54.349** [25.026]	-58.348** [24.914]		-0.067** [0.027]	-0.069** [0.027]
Central Highlands		49.197 [32.272]	42.023 [32.156]		-0.064** [0.032]	-0.066** [0.033]
South East		167.672*** [27.212]	160.983*** [27.162]		0.150*** [0.030]	0.145*** [0.030]
Mekong River Delta		-95.464*** [23.128]	-105.09*** [23.133]		0.051** [0.024]	0.046* [0.024]
Per capita income		3.970*** [0.937]	4.295*** [1.000]		0 [0.001]	-0.001** [0.001]
Year 2006 (yes=1)		5.616 [11.899]	14.491 [14.967]		-0.028** [0.012]	-0.008 [0.014]
Year 2008 (yes=1)		-37.397*** [13.484]	-1.906 [17.466]		-0.006 [0.014]	0.012 [0.015]
No edu. degree	Omitted					
Primary school degree		478.376*** [20.270]	451.690*** [20.101]		0.248*** [0.017]	0.232*** [0.017]
Lower secondary school degree		186.248*** [23.192]	155.044*** [23.074]		0.140*** [0.018]	0.123*** [0.018]
Upper secondary school degree		-204.84*** [31.040]	-238.06*** [31.018]		-0.081*** [0.022]	-0.099*** [0.022]
Technical degree		717.221*** [27.069]	679.387*** [27.091]		0.121*** [0.024]	0.108*** [0.024]
Post secondary degree		711.963*** [34.039]	664.929*** [34.058]		0.108*** [0.030]	0.106*** [0.030]
Sick in the past 4 weeks		-293.04*** [17.805]	-289.17*** [17.831]		-0.053*** [0.015]	-0.054*** [0.015]
Constant	1,288.9*** [9.449]	1,152.9*** [37.400]	994.727*** [40.347]	0.936*** [0.012]	0.562*** [0.030]	0.555*** [0.030]
Observations	87944	87938	87938	87944	87938	87938
R-squared	0.00	0.00	0.00	0.16	0.17	0.18

