2018 Spring Honors Capstone Projects   Honors College

5-1-2018

STATISTICAL ANALYSIS OF HOUSEHOLD LABOR SUPPLY: EDUCATION, COLLEGE, AND EARNING POWER

Hrishabh Khakurel

STATISTICAL ANALYSIS OF HOUSEHOLD LABOR

SUPPLY: EDUCATION, COLLEGE, AND

EARNING POWER

by

HRISHABH KHAKUREL

Presented to the Faculty of the Honors College of

The University of Texas at Arlington in Partial Fulfillment

of the Requirements

For the Degree of

HONORS BACHELOR OF SCIENCE IN MATHEMATICS

THE UNIVERSITY OF TEXAS AT ARLINGTON

May 2018

ACKNOWLEDGEMENTS

ABSTRACT

STATISTICAL ANALYSIS OF HOUSEHOLD LABOR

SUPPLY: EDUCATION, COLLEGE AND

EARNING POWER

Hrishabh Khakurel, B.S. Mathematics

The University of Texas at Arlington, 2018

Faculty Mentor: Christy Spivey

When we look at the general trend in household labor supply, historically we can see that when husbands start earning more, their wives reduce their labor supply. In the last few decades, the number of wives who have attained higher education has increased, and with this, the number of wives earning a higher income than their husbands have also increased. But still, research till now suggests that husbands' labor supply is not significantly affected by their wives' wage increase. This paper studies the labor supply of husbands and wives relative to their educational attainment by using educational attainment to measure the earning power. By conducting a statistical analysis on 2014-2016 American Community Surveys (ACS) data, I am going to study the dynamic relationship between the labor supply decision of husbands and their wives, and look for

pieces of evidence to see whether the husbands' labor supply is affected by an increase in their wives earning power. Moreover, by using College majors to calculate earning potential, we find that husbands labor supply response is more significant than when simple educational attainment is used. The preliminary results of this research show that even till this day, husbands wage increase has a negative effect on labor supply of wives, whereas increase in wives' salary does not show any significant effects on husbands' labor supply.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1

INTRODUCTION

Historical trend suggests that married women are less likely to work compared to married men and single women. Their labor force participation is significantly affected by the change in their husbands' wages. Usually, the trend suggests that with the rise in husbands' wage, there is a significant decrease in the labor force participation and working hours of their wives. In contrast, the labor force participation of husbands does not show any response towards the change in their wives' wages.

If we look at the theory of comparative advantage, then we can explain that these trends are justifiable. Since the husbands' advantage lies in the market sector, he will specialize in the market, whereas his wife will specialize in domestic production where she holds a comparative advantage. Stotsky (1997) claimed that the joint system of filing tax in the United States also affects the labor force participation of wives. He states that because of the marginal progressive tax rate, spouses who earn less than their counterparts are discouraged from participating in the labor force.

With the change of times, women now have more access to education, which has led to an increase of labor force participation of women. With the increase of labor force participation of women, many families now have wives who earn more than their husbands. Winkler (1998) found that families where wives made more than their husbands is about 20-25 percent of all dual-earner couples. This number had an increase

of 16 percent since 1981. This result shows that the labor force relationship between husbands and wives might not be same as before.

Families where husbands earn more than their wives might still follow the traditional household labor supply patterns. But what will happen in families where wives are the primary earners (wives make more than their husbands)? Will husbands labor force participation go down with the increase in wages of their wives? Or will they still be unaffected by this wage increase? These are some of the questions this paper will focus on.

Women's rising status in the labor force might allow their husbands to adjust their work hours. This will give women a more significant role in both the household and social decision-making process. Various researchers have suggested that when the earning potential of women increase they gain more decision-making power, which has vast implications for the socio-economic status of the family and the whole society. Research has also shown that as women start to out-earn their husbands, they attain an increase in bargaining power. The increase of decision making and bargaining powers directly leads to an increase in opportunities for women and will help solve various problems like gender wage gap, family violence, and sexual harassment.

Furthermore, we will also be able to ask questions like how the relative earning of spouses impact marital stability? Or we can also look at the effects of increased earning potential for women on their children. Research has established that with an increase in women's bargaining and decision-making power, their children receive significant benefits. Thus, this research will look deeper into the role of women in the labor supply

market and see how their improvement in economic status will benefit the lives of their

husbands and ultimately the society itself.

CHAPTER 2

LITERATURE REVIEW

A plethora of studies have examined the household labor supply decisions when the wage of any one member of the household increases. Majority of these studies show that there is a decrease in working hours of the wife when her husband's wage increases. Whereas, husbands' labor supply decision is not affected by the change in wives' wages (Borjas, 2005).

Winkler (1998) found that the number of families where wives out-earn their husbands has increased by 16 percent since 1981. This type of increase is not unprecedented as women now have more opportunities to gain education and to participate in the workforce. According to the Center for the Study of Opportunity in Higher Education, today more women hold a college degree than men. Women also have been outpacing men in the number of college degrees awarded since 1980's. Thus, this number is anticipated to continue increasing in the upcoming decades. This increase in women's economic status might cause husbands to readjust their work hours and break free from traditional labor distribution patterns.

Devereaux (2004) found that married women worked more if their wage increased, whereas they worked less if their husband's wage increased. He also found that the labor supply of married men was unresponsive to their spouse's wage. But now specific evidence shows that this scenario is changing. Blau and Kahn (2007) found a decrease in cross-wage elasticity for married women from 1980 to 2000. Their study

showed that the traditionalhousehold division of labor is starting to change. Their findings are consistent with results from other studies that show the breakdown of the conventional household division of labor.

However, Bradbury and Katz (2008) claimed that the decline in cross-wage elasticity for married women has ended. Furthermore, they also stated that from 1997 to 2002, the response of women's labor supply to husbands' wages has increased for married women with children. If we look at all the research, then we might conclude that the labor supply of women is still negatively affected by their husband's wages, but this trend is starting to decline. Their results also show that the men's labor supply is still unaffected by their wives' wages.

The OLS results from Blau and Kahn (2007) shows that wife secondary earners respond positively to their own wage and negatively to their spouse's wage. Whereas for husbands, they report that their response is similar to their wives, but their magnitude of response is larger. Bradbury and Katz (2008) also show that there is a positive cross wage elasticity for husbands. This literature stands as the foundation for the study we are about to conduct.

CHAPTER 3

EMPIRICAL MODEL AND THEORETICAL CONSIDERATIONS

In this paper, the statistical analysis is conducted by using OLS regression methods. We will be using OLS for looking at usual hours worked per week. The control variables include age, age squared, number of children, number of children less than five years, race indicators, region indicator, and dummy variables for years.

By using educational attainment and earning power variables to serve as a measure of earning power, we are excluding wages from our estimations. This helps me avoid difficulties in estimating wages for those who do not work. Furthermore, earning potential is unlikely to be the results of the joint decision in the household which reduces bias in our model.

Comparative advantage and bargaining theories are also relevant to this study. The theory of comparative advantage shows that each spouse distributes their time between labor work and non-labor activities by maximizing a household utility function. This household utility function is subjected to a household production possibilities frontier. This results in husbands entering the workplace earlier because he holds a comparative advantage in the labor market due to high wages, whereas the wife may or may not enter the workplace because she holds a comparative advantage in non-labor activities. But if the couple decides to increase their consumption of the market good, then the wife may increase her participation in the labor market. Thus, the comparative advantage theory predicts that the spouses will specialize in either labor-market or non-

labor market activities based on their comparative advantage, although this specialization may not be exclusive. In this paper, we will assume that husband and wife have same home production values. This is because individual household productivity is not observed. If we look at this model, then their market values determine their comparative advantage. Thus, we expect that the spouse with lower earnings potential will work fewer hours or will not work at all.

If we look at the traditional model of labor supply, then the labor supply response depends on the relative sizes of substitution and income effects. Thus, for an average household, as the husband's market value increases, the income effect predicts that wife will demand more leisure (assuming leisure is normal good). This model shows negative cross-wage elasticities and positive own-wage elasticities for married women. This result is consistent with the substitution effect dominating the income effect.

This traditional model was appropriate to study the cross-wage elasticities of women in the past, but in recent time we can assume that market value of the husband is dependent to household's joint choice of time allocation. If the husband's labor market value rises then he may work more while his wife may work less. Or if their non-labor market time is leisure, which they like to share, then the wife may decide to work more. Thus, it is better for us to conduct an empirical analysis to study how an individual reacts to change in their own or their spouse market value.

I am going to conduct four different regression analyses for working hours of both husband and wife. Thus, there will be a total of 8 regression. Following is the list of essential variables and their description that is used in the regression models:

uhrswork: hours worked every week

epower: Earning potential

epower_sp: Earning potential for spouse

yrseduc: Total years of education

yrseduc_sp: Total years of education for spouse

ohhincome: hourly wage

age: individuals age

agesq: individual age squared

nchild: no children

nchlt5: no children under age of 5

white, black, Asian, Hispanic: Racial indicators

neast, mwest, south: Regional indicators

yr2015, yr2016: year indicators

Other variables will be described whenever they are needed.

In the first regression, I am going to regress hours worked per week with earning power of oneself and earning power of spouse and all the control variables. The regression equations can be represented as follows:

$$uhrswork = \beta_0 + \beta_1(epower) + \beta_2(epower\_sp) + \beta_3(age) + \beta_4(agesq) +$$
$$\beta_5(nchild) + \beta_6(nchlt5) + \beta_7(white) + \beta_8(black) + \beta_9(asian) + \beta_{10}(hispanic) +$$
$$\beta_{11}(neast) + \beta_{12}(mwest) + \beta_{13}(south) + \beta_{14}(yr2015) + \beta_{15}(yr2016)$$

In the second regression, hours worked per week is going to be regressed with years of education for himself/herself, years of education for the spouse, hourly income, and all the control variables. The regression equation is as follows:

$$uhrswork = \beta_0 + \beta_1(yrseduc) + \beta_2(yrseduc\_sp) + \beta_3(ohhincome) + \beta_4(age) +$$

$$\beta_5(agesq) + \beta_6(nchild) + \beta_7(nchlt5) + \beta_8(white) + \beta_9(black) + \beta_{10}(asian) +$$

$$\beta_{11}(hispanic) + \beta_{11}(neast) + \beta_{12}(mwest) +$$

$$\beta_{13}(south) + \beta_{14}(yr2015) + \beta_{15}(yr2016)$$

For the third regression, hours worked per week is regressed with various levels of education. The variables for these levels of education are as follows:

hsgradbasic and *hsgradbasic_sp*: at least high school graduate

somecollbasic and *somecollbasic_sp*: some college-level courses

collgradbasic and *collgradbasic_sp*: college graduate

gradschbasic and *gradschbasic_sp*: graduate school

The regression equation is as follows:

$$uhrswork = \beta_0 + \beta_1(hsgradbasic) + \beta_2(somecollbasic) +$$

$$\beta_3(collgradbasic) + \beta_4(gradschbasic) + \beta_5(hsgradbasic\_sp) +$$

$$\beta_6(somecollbasic\_sp) + \beta_7(collgradbasic\_sp) + \beta_8(gradschbasic\_sp) +$$

$$\beta_9(age) + \beta_{10}(agesq) + \beta_{11}(nchild) + \beta_{11}(nchlt5) + \beta_{12}(white) +$$

$$\beta_{13}(black) + \beta_{14}(asian) + \beta_{15}(hispanic) + \beta_{16}(neast) + \beta_{17}(mwest) + \beta_{18}(south) +$$

$$\beta_{19}(yr2015) + \beta_{20}(yr2016)$$

The last regression deals with hours worked and variables that compare the levels of education. These variables are described below:

moreeducyr: If he/she has more education than the spouse

sameeducyr: If he/she has the same education as his/her spouse

The regression equation is given below:

$$uhrswork = \beta_0 + \beta_1(moreeducyr) + \beta_2(sameeducyr) + \beta_3(yrseduc) +$$

$$\beta_4(age) + \beta_5(agesq) + \beta_6(nchild) + \beta_7(nchlt5) + \beta_8(white) + \beta_9(black) +$$

$$\beta_{10}(asian) + \beta_{11}(hispanic) + \beta_{11}(neast) + \beta_{12}(mwest) +$$

$$\beta_{13}(south) + \beta_{14}(yr2015) + \beta_{15}(yr2016)$$

By using statistical analysis software STATA, we are going to conduct the regression analysis, and the obtained results will help us conclude our research questions.

CHAPTER 4

DATA AND DESCRIPTIVE STATISTICS

The data that we are using for this analysis is taken from American Community Survey(ACS) for the years of 2014, 2015, 2016. It contains all households and persons from the 1% ACS samples for 2014, 2015, and 2016. I have restricted my analysis to married couples aged between 22 and 60. After implementing these restrictions, over 2,300,000 households remain.

Before running the regressions, I calculated the earning power for those with college degrees or higher. To estimate the earning potential, I took the weighted means of annual wage income by college major for all full-time workers who are not currently enrolled in school. The ACS data does not have a degree field for any of the graduate degrees. Hence, we can only get the general outlook from these earning potentials. Thus, our analysis will be most accurate for those with only a bachelor's degree.

The list of all possible college majors with their earning potential and the fraction of male and female who are in those majors, shows that most of the high earning profession have a higher fraction of males than females. I conducted similar calculations for people with master's degree, professional degree, and Ph.D. degree. The trend of having higher fractions of males in high earning majors is visible in all of these.

Table 4.1 compares the earning potential, annual wage income, usual hours of work, years of education, and the fraction of spouse working by gender and work status. Work status is classified into full-time, part-time, and not working. A full-time

working wife earns $67,093, which is slightly lower than what her husband makes. Part-time and non-working wives make significantly less than their male counterparts. In contrast, full-time working husband makes $69,402, which is considerably higher than what his wife makes on average.

	Wife			Husband		
	Full Time	Part Time	Not Working	Full Time	Part Time	Not Working
Earning Power ($)	67,093	62,045	57,523	69,402	61,551	57,661
Spouse Earning Power ($)	67,191	69,664	67,214	64,218	61,928	58,829
Wage Income ($)	53,674	19,734	0	77,870	28,203	0
Spouse Wage Income ($)	60,052	72,122	71,951	32,815	33,079	30,180
Hours of Work (hours)	42	22	0	46	24	0
Spouse Hours of Work (hours)	41.09	42.15	41.41	28.17	28.01	26.76
Years Education (years)	15	14	13	14	13	13
Spouse Years Education (years)	13.92	14.00	13.42	14.12	13.66	13.31
Spouse Fraction Working (years)	0.88	0.90	0.83	0.72	0.74	0.63

Table 4.1: Earning Power, Income, Work Hours, and Education by Gender and Work Status

Table 4.2 shows the summary statistics for people who do not have a college degree. We simply calculated the weighted mean for full-time, full-year workers not in school who have an associate's degree, some college courses, high school degree, some high school, middle/elementary school, or no education. These weighted means is their earning potential. Table 4.3 also shows that people with an associate degree make an average of $55,060, people with some college courses earn an average of $52,780, high school graduates make $44,761, and people with some high school classes make $36,358

on average. This shows that higher the level of education, higher the earning power.

Column 1	Mean Earnings Power	Fraction Male	Fraction Female
Associates degree	55060.23	0.5620427	0.4971594
Some college	52780.23	0.5586511	0.4413489
High school grad	44761.49	0.5586511	0.4413489
Some high school	36358.41	0.5713234	0.4286766
Middle/elementary	31177.59	0.5552791	0.4447209
No education	35765.33	0.548792	0.451208

Table 4.2: Earning Power for Less than a College Education

CHAPTER 5

RESULTS

5.1 Hours of Work and Earning Power

The first regression that we conduct is the regression of average hours of work with the earning power of the individual and earning power of the spouse, including the control variables. Table 5.1 gives the regression output for husbands. The first column of Table 5.1 gives the coefficient of variables of the regression equation. We can see that the earning power of an individual positively affects his usual work hours. On average, ten thousand dollars increase in earning power increases the working hours by 0.311 hours. In contrast, the hours worked for the husband is negatively affected by the earning power of spouse. Although the effect is almost negligible.

	Coef.	Robus Std. Err.	t	P>|t|	[95% Conf.	Interval]
epower	0.0000311	3.94E-07	78.83	0	0.0000303	0.0000318
epower_sp	-5.26E-07	4.73E-07	-1.11	0.266	-1.45E-06	4.00E-07
age	0.3431092	0.0116722	29.4	0	0.320232	0.3659864
agesq	-0.00405	0.000133	-30.52	0	-0.00432	-0.0037989
nchild	0.1747404	0.0104664	16.7	0	0.1542267	0.1952542
nchlt5	0.0073295	0.022325	0.33	0.743	-0.03642	0.0510857
white	0.7640314	0.0499941	15.28	0	0.6660446	0.8620183
black	-1.7723	0.0674924	-26.26	0	-1.904582	-1.640017
asian	-2.287682	0.0655437	-34.9	0	-2.416146	-2.159219
hispanic	-1.395476	0.0358298	-38.95	0	-1.465701	-1.325251
neast	0.1405807	0.0342493	4.1	0	0.0734531	0.2077082
mwest	0.5043304	0.0329476	15.31	0	0.4397543	0.5689065
south	1.035281	0.0300252	34.48	0	0.9764322	1.094129
yr2015	0.0689297	0.0263946	2.61	0.009	0.0171972	0.1206622
yr2016	-0.03951	0.0263304	-1.5	0.133	-0.09112	0.012093

Table 5.1: Husband Hours Worked Against Earning Power

Table 5.2 gives the regression output for wives. It shows that her own earning power has a positive effect on her average hours worked. When her earning potential increases by ten thousand dollars, her work hours increase by 0.655 hours on average. This magnitude is more significant than for her husband. The effect of her husband's earning power is very high. As for every ten thousand dollars increase in her husband's earning power, her own working hours decrease by 0.254 hours.

These results are consistent with our earlier predictions. For women, the increase in their husband's earning power negatively affects their own working power. We see similar results for the husband too, but the magnitude of the effect is very low.

uhrswork	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
epower	0.0000655	5.86E-07	111.66	0	0.0000643	0.0000666
epower_sp	-0.000025	5.10E-07	-49.78	0	-0.000026	-0.000024
age	0.5752812	0.0128302	44.84	0	0.5501345	0.600428
agesq	-0.006916	0.000152	-45.52	0	-0.007214	-0.006618
nchild	-1.242719	0.0135323	-91.83	0	-1.269242	-1.216196
nchlt5	-0.5198	0.0299703	-17.34	0	-0.578554	-0.461072
white	-0.22761	0.059885	-3.8	0	-0.344983	-0.1102378
black	0.8210608	0.0758712	10.82	0	0.6723558	0.9697658
asian	0.1656585	0.0787163	2.1	0.035	0.0113772	0.3199399
hispanic	0.2980339	0.0429079	6.95	0	0.2139358	0.382132
neast	0.0235289	0.0424278	0.55	0.579	-0.059628	0.106686
mwest	0.4943554	0.0405961	12.18	0	0.4147883	0.5739224
south	1.089411	0.0369068	29.52	0	1.017075	1.161747
yr2015	0.213737	0.0313215	6.82	0	0.1523478	0.2751262
yr2016	0.3334478	0.0312759	10.66	0	0.272148	0.3947475

Table 5.2: Wife Hours Worked Against Earning Power

5.2 Hours of Work and Years of Education

The second regression we conduct relates hours of work per week with years of education. The output for this regression for the husband is tabulated in Table 5.3. As we can see, an increase of 1 years of education increases the hours of work per week

increases by an average of 0.24 hours. We also see similar results if the years of education for spouse also increases. On average, the hours worked per week increases by 0.028 hours, when the years of education for spouse increases by 1 year. Although, both their individual and spouse's years of education positively affects their hours of work, the magnitude by which spouse's years of education affects work hours is lower.

uhrswork	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
yrseduc	0.237005	0.0044947	52.73	0	0.2281956	0.24581
yrseduc_sp	0.027748	0.0045448	6.11	0	0.0188412	0.036656
ohhincom	-3.35E-06	6.18E-07	-5.42	0	-4.56E-06	-2.14E-06
age	0.351249	0.0116787	30.08	0	0.3283601	0.374139
agesq	-0.00410	0.0001331	-30.8	0	-0.0043612	-0.003839
nchild	0.196247	0.010498	18.69	0	0.1756717	0.216823
nchlt5	0.027173	0.0223844	1.21	0.225	-0.0166991	0.071046
white	0.728637	0.0501682	14.52	0	0.6303095	0.826965
black	-1.908194	0.0675793	-28.24	0	-2.040647	-1.775741
asian	-1.947116	0.0653155	-29.81	0	-2.075133	-1.8191
hispanic	-1.22936	0.037093	-33.14	0	-1.302061	-1.156659
neast	0.142019	0.0343907	4.13	0	0.0746143	0.209423
mwest	0.447877	0.0330136	13.57	0	0.3831718	0.512582
south	1.039132	0.0300776	34.55	0	0.9801805	1.098083
yr2015	0.071343	0.0264548	2.7	0.007	0.0194934	0.123194
yr2016	-0.03582	0.0263908	-1.36	0.175	-0.0875456	0.015904
_cons	32.80847	0.2546245	128.85	0	32.30941	33.30752

Table 5.3: Husband Work Hours Regression with Years of Education

Table 5.4 shows the regression results for wives. As we can see, the work hours increase by 0.63 hours on average when her years of education increases by one year. In contrast, when her husband's years of education increases by one year, her work hours decrease by 0.26 hours on average.

These results are also consistent with our previous regression results. This shows that the usual hours of work for women increases with the increase in her own years of education and decreases with the increase in her husbands' years of education.

uhrswork	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
yrseduc	0.6313435	0.0057737	109.35	0	0.6200273	0.6426597
yrseduc_sp	-0.257668	0.0054988	-46.86	0	-0.268446	-0.246891
ohhincome	-0.000010	8.08E-07	-12.76	0	-0.000012	-8.72E-06
age	0.5853253	0.0128302	45.62	0	0.5601786	0.610472
agesq	-0.00694	0.0001521	-45.67	0	-0.00724	-0.00665
nchild	-1.244644	0.0135814	-91.64	0	-1.271263	-1.218025
nchlt5	-0.532316	0.0300729	-17.7	0	-0.59126	-0.47337
white	-0.401172	0.0602717	-6.66	0	-0.51930	-0.28304
black	0.7887549	0.0761726	10.35	0	0.6394591	0.9380508
asian	0.4474187	0.0786447	5.69	0	0.2932777	0.6015597
hispanic	0.6115405	0.0437364	13.98	0	0.5258186	0.6972623
neast	-0.044646	0.0425765	-1.05	0.294	-0.1280946	0.0388025
mwest	0.440121	0.0406512	10.83	0	0.360446	0.5197959
south	1.044844	0.0369833	28.25	0	0.9723581	1.11733
yr2015	0.2183435	0.0313521	6.96	0	0.1568944	0.2797926
yr2016	0.3243674	0.0313099	10.36	0	0.2630011	0.3857337
_cons	21.72811	0.2711366	80.14	0	21.19669	22.25953

Table 5.4: Wife Work Hours Regression with Years of Education

5.3 Hours of Work and Level of Education

The regression results for hours of work and level of education for husbands is shown in Table 5.5. This regression shows how the usual work hours per week is affected

by the level of educational attainment. There are four levels of educational attainment: high school graduate, some college coursework, college graduate, and graduate school graduate. The base level is not having a high school diploma. Being a high school graduate increases the usual hours worked by 0.623 hours on average, having some college coursework increases the work hours by nearly an hour, having a college degree increases the usual hours worked by 1.51 hours, and having a graduate degree increases the usual hours worked by 2.82 hours on average. This shows that for a male, the higher the level of education the higher the usual hours worked per week will be. The wife's educational attainment also affects the husband's working hours, but the magnitude of the effect is lower.

Table 5.6 shows the regression output of hours worked regressed with levels of education for women. As we can see, wife's own educational attainment is positively related to her work hours. The magnitude of the positive relation is higher than for her husband. Having a high school graduate increases her usual hours worked by 0.813 hours on average, having some college coursework increases her work hours by 1.46 hours, having a college degree increases her usual hours worked by 3.42 hours, and having a graduate degree increases her usual hours worked by 6.24 hours on average.

The work hours of wives are negatively affected by the educational attainment of their husband. If their husband has a high school degree, the hours of work for the wives decreases by 0.14 hours. If the husband has some college courses, hours of work decreases by 0.42 hours, if the husband has a college degree, hours of work decreases by 1.48 hours, and if the husband has a graduate degree, hours of work decreases by 2.42

hours. This shows that the higher the educational attainment by the husband, the lower the work hours for the wife.

uhrswork	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
hsgradbasic	0.62390	0.05017	12.43000	0.00000	0.52556	0.72224
somecollbasic	0.99972	0.05088	19.65000	0.00000	0.90001	1.09944
collgradbasic	1.51176	0.05327	28.38000	0.00000	1.40736	1.61616
gradschbasic	2.82198	0.05771	48.90000	0.00000	2.70887	2.93509
hsgradbasic_sp	0.47896	0.05305	9.03000	0.00000	0.37498	0.58294
somecollbasic_sp	0.63290	0.05270	12.01000	0.00000	0.52962	0.73619
collgradbasic_sp	0.69907	0.05535	12.63000	0.00000	0.59059	0.80755
gradschbasic_sp	0.46267	0.05911	7.83000	0.00000	0.34682	0.57852
ohhincome	0.00000	0.00000	-6.20000	0.00000	-0.00001	0.00000
age	0.34777	0.01169	29.75000	0.00000	0.32486	0.37068
agesq	-0.00407	0.00013	-30.53000	0.00000	-0.00433	-0.00381
nchild	0.18845	0.01052	17.92000	0.00000	0.16784	0.20906
nchlt5	0.02251	0.02239	1.01000	0.31500	-0.02137	0.06640
white	0.74076	0.05012	14.78000	0.00000	0.64252	0.83900
black	-1.87207	0.06759	-27.70000	0.00000	-2.00453	-1.73960
asian	-2.01716	0.06540	-30.84000	0.00000	-2.14534	-1.88898
hispanic	-1.25701	0.03802	-33.06000	0.00000	-1.33154	-1.18249
neast	0.16341	0.03448	4.74000	0.00000	0.09584	0.23098
mwest	0.47128	0.03306	14.26000	0.00000	0.40649	0.53607
south	1.04884	0.03010	34.85000	0.00000	0.98985	1.10783
yr2015	0.07242	0.02644	2.74000	0.00600	0.02060	0.12425
yr2016	-0.03718	0.02638	-1.41000	0.15900	-0.08888	0.01451
_cons	34.81483	0.25558	136.22000	0.00000	34.31390	35.31576

Table 5.5: Husband Hours Worked Regression With Levels of Education

uhrswork	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
hsgradbasic	0.8135475	0.0716025	11.36	0	0.6732088	0.9538861
somecollbasic	1.456424	0.0706497	20.61	0	1.317953	1.594895
collgradbasic	3.425409	0.0739124	46.34	0	3.280543	3.570275
gradschbasic	6.240185	0.0776473	80.37	0	6.087999	6.392371
hsgradbasic_sp	-0.142210	0.0551918	-2.58	0.01	-0.250384	-0.034036
somecollbasic_sp	-0.424309	0.0556935	-7.62	0	-0.533466	-0.315151
collgradbasic_sp	-1.47795	0.0603127	-24.5	0	-1.596161	-1.359739
gradschbasic_sp	-2.421926	0.0674385	-35.91	0	-2.554103	-2.289748
ohhincome	-0.000010	8.08E-07	-13.02	0	-0.000012	-8.94E-06
age	0.5488106	0.0128282	42.78	0	0.5236679	0.5739534
agesq	-0.006519	0.000152	-42.89	0	-0.006817	-0.006221
nchild	-1.237517	0.0135479	-91.34	0	-1.26407	-1.210963
nchlt5	-0.58373	0.0300404	-19.43	0	-0.642613	-0.524856
white	-0.341476	0.05999	-5.69	0	-0.459054	-0.223897
black	0.824586	0.0759712	10.85	0	0.675685	0.973487
asian	0.392251	0.0784689	5	0	0.2384546	0.5460474
hispanic	0.5054047	0.0441694	11.44	0	0.4188342	0.5919752
neast	-0.084896	0.0425835	-1.99	0.046	-0.168359	-0.001434
mwest	0.4571264	0.0405906	11.26	0	0.3775701	0.5366827
south	1.053719	0.0369281	28.53	0	0.981341	1.126097
yr2015	0.2182396	0.0312796	6.98	0	0.1569327	0.2795465
yr2016	0.3168563	0.0312325	10.15	0	0.2556417	0.378071
_cons	26.14788	0.2726112	95.92	0	25.61357	26.68219

Table 5.6: Wife Hours Worked Regression With Levels of Education

5.4 Hours of Work and Comparison of Educational Attainment

In this regression, we relate hours of work with dummy variables that compares the educational attainment between husband and wife. These dummy variables are named as *moreeducyr* and *sameeducyr*. The value of *moreeducyr* is 1 when his/her years of education is higher than their spouse, and the value of *sameeducyr* is 1 when they have same years of education. The base level is when they have fewer years of education than their spouse.

Table 5.7 shows the regression output for the husband. This result indicates that if the husband has more or same years education than the wife, then his hours worked will be higher than when he has fewer years of education. Having more years of education than his spouse increases the hours worked by 0.12 hours on average. And having the same years of education as his wife increases the hours worked by 0.01 hours on average.

Similarly, Table 5.8 shows the regression output for wives. The result is similar to the husband's case, but the magnitude of the effect is higher. Having more years of education than their husband will increase their hours worked by 2 hours on average, and having same years of education increases their hours worked by 1.2 hours on average.

uhrswork	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
moreeducyr	0.1236623	0.0307776	4.02	0	0.0633393	0.1839854
sameeducyr	0.0102105	0.0260902	0.39	0.696	-0.0409254	0.0613463
yrseduc	0.2439221	0.0042657	57.18	0	0.2355615	0.2522827
ohhincome	-3.26E-06	6.18E-07	-5.27	0	-4.47E-06	-2.05E-06
age	0.3562384	0.0116749	30.51	0	0.333356	0.3791208
agesq	-0.0041733	0.0001331	-31.36	0	-0.0044341	-0.0039124
nchild	0.1884441	0.0104949	17.96	0	0.1678746	0.2090137
nchlt5	0.0351354	0.0223756	1.57	0.116	-0.00872	0.0789907
white	0.7435326	0.0501585	14.82	0	0.6452236	0.8418415
black	-1.897762	0.0675925	-28.08	0	-2.030241	-1.765283
asian	-1.936087	0.0653209	-29.64	0	-2.064113	-1.80806
hispanic	-1.273204	0.0370388	-34.37	0	-1.345799	-1.200609
neast	0.155798	0.0343976	4.53	0	0.0883799	0.2232162
mwest	0.4505645	0.0330184	13.65	0	0.3858496	0.5152794
south	1.041359	0.0300806	34.62	0	0.9824021	1.100316
yr2015	0.0728423	0.0264548	2.75	0.006	0.0209918	0.1246928
yr2016	-0.0320833	0.0263908	-1.22	0.224	-0.0838083	0.0196418
_cons	32.98969	0.2541359	129.81	0	32.49159	33.48779

Table 5.7: Husband Hours Worked Regression with Education Comparison Variables

uhrswork	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
moreeducyr	2.003507	0.0367836	54.47	0	1.931413	2.075602
sameeducyr	1.203353	0.0351048	34.28	0	1.134549	1.272158
yrseduc	0.3933847	0.0054057	72.77	0	0.3827898	0.4039797
ohhincome	-0.000010	8.07E-07	-12.71	0	-0.0000118	-8.68E-06
age	0.5847589	0.0128287	45.58	0	0.559615	0.6099028
agesq	-0.006918	0.0001521	-45.5	0	-0.007217	-0.006620
nchild	-1.238664	0.0135686	-91.29	0	-1.265258	-1.21207
nchlt5	-0.539991	0.0300534	-17.97	0	-0.5988947	-0.481087
white	-0.415629	0.0602003	-6.9	0	-0.5336202	-0.297639
black	0.7769607	0.0760967	10.21	0	0.6278136	0.9261077
asian	0.4356183	0.0785235	5.55	0	0.2817148	0.5895219
hispanic	0.6863192	0.0435557	15.76	0	0.6009514	0.7716869
neast	-0.056982	0.0425462	-1.34	0.18	-0.1403721	0.0264063
mwest	0.424955	0.040639	10.46	0	0.3453039	0.5046061
south	1.037031	0.0369638	28.06	0	0.964583	1.109479
yr2015	0.2177136	0.0313371	6.95	0	0.1562939	0.2791333
yr2016	0.3207621	0.0312955	10.25	0	0.2594239	0.3821004
_cons	20.32796	0.2700814	75.27	0	19.79861	20.85731

Table 5.8: Wife Hours Worked Regression with Education Comparison Variables

CHAPTER 6

CONCLUSION

In this study, I asked the question whether the increase in educational attainment and earning power of wives change the labor market behavior of their husbands. Theories of comparative advantage state that the answer should be positive, but in this paper, I used empirical methods to answer these questions.

Our statistical analysis shows that although the increase in wives earning power and educational attainment affects the hours worked by husband, the magnitude of the effect is minimal. Based on our results we can also conclude that having same or higher education than their spouses leads to a higher working hour. The magnitude of this effect is higher for wives than for their husbands. This shows that provided with enough educational opportunities, wives may eventually become the bread-winners for their household.

Other conclusions that we can draw from this study is that men and women respond differently to their spouse's educational attainment. Husbands will work more when their spouse has more educational attainment, whereas wives will choose to work less when their spouse have higher educational attainment.

REFERENCES

Blau, F. and L. Kahn, 2007. 'Changes in the Labor Supply Behavior of Married Women: 1980-2000," Journal of Labor Economics, July: 393-438.Borjas, George, 2005. Labor Economics, 3rd edition, New York: McGraw Hill/Irwin.

Bradbury, Katharine, and Jane Katz, 2008. "The Responsiveness of Married Women's Labor Force Participation to Income and Wages: Recent Changes and Possible Explanations." FRB of Boston, Working Paper No. 08-7

Devereaux, Paul J., 2004. "Changes in the Relative Wages and Family Labor Supply," Journal of Human Resources 39(3): 696-722.

Drago, Robert, David Black, and Mark Wooden, 2004. "Female Breadwinner Families: Their Existence, Persistence and Sources," Melbourne Institute Working Paper No. 19/04.

Goldstein, Joshua R. and Catherine T. Kenney, 2001. "Marriage Delayed or Marriage Forgone? New Cohort Forecasts of First Marriage for U.S. Women," American Sociological Review 66(4): 506-519.

Heckman, James, J., 1979. "Sample Selection Bias as a Specification Error," Econometrica 47: 153-162.

Heim, Bradley T., 2007. "The Incredible Shrinking Elasticities," The Journal of Human Resources 42(4): 881-918.

Kalenkoski C., D. Ribar, and L. Stratton, 2008. "The Influence of Wages on Parents' Allocation of Time to Child Care and Market Work in the United Kingdom," Journal of Population Economics, forthcoming.

Lundberg, Shelly J., Robert A. Pollak, and Terence J. Wales, 1997. "Do Husbands and Wives Pool Their Resources? Evidence from the U.K. Child Benefit." Journal of Human Resources 32(3):463–480Stostky, Janet, 1997. "How Tax Systems Treat Men and Women Differently," Finance & Development, March: 30-33.

Winkler, Anne, 1998. "Earnings of husbands and wives in dual-earner families," Monthly Labor Review, April: 42-48.

Winkler, Anne, Timothy D. McBride, and Courtney Andrews, 2005. "Wives Who Outearn Their Husbands: A Transitory or Persistent Phenomenon for Couples?" Demography 42(3): 523-35.

Winkler, Anne and David Rose, 2000. "Career Hierarchy in Dual-Earner Families,"

BIOGRAPHICAL INFORMATION

Hrishabh Khakurel began his undergraduate career at the University of Texas at Arlington in 2014 as an international student from Nepal. In May 2018, he received an Honors Bachelor of Science degree in Mathematics (Statistics option) with a minor in Economics. He will start working towards a Ph.D. in Mathematics (Statistics option) in the Fall of 2018. He plans to work in the field of data science.