Does Height Affect Wage? Empirical Evidence From China

Yuan Zheng[1]

Abstract

Research shows that: Firstly, height has a significant positive effect on income. It means there is a phenomenon of height discrimination in the Chinese labor market. Secondly, height discrimination has obvious regional heterogeneity, but the impact of each region on men and women. The degree of discrimination cannot be explained here because the level of discrimination in the eastern region is lower than in economically underdeveloped regions because the central, western, and eastern regions have different levels of high discrimination and no regularity. Fourthly, height discrimination is likely to come from employer discrimination in the labor market, because there is obvious height discrimination in certain types of businesses and industries, especially service industries. This does not indicate that when solving the discrimination problem in the labor market. It is not important to increase its own human capital. The increase in the level of personal human capital makes it obtain a position with a higher professional reputation and an increase in the human capital stock of the labor force. It is crucial to the long-term economic development of a country or region. In terms of policies, the adoption of relevant legislation to regulate the labor market and ensure equal pay for equal work and equal employment opportunities have a positive significance in eliminating differences in the appearance of the labor market. Periodic nutrition and sanitation environmental interventions also play an important role in the return from the labor market throughout the life cycle.

Keywords: Labor Market,Chinese Market,Labor Economics,Recruitment,Height Discrimination,Gender Discrimination.

[1] Chulalongkorn University, zhengyuanzyzy@gmail.com

Introduction

Does height affect wage? The effect of height on wage in the labor market is reflected in the fact that people having different heights are given different salaries. Some argued that this could be because height is related to some other favorable characteristics such as confidence, intelligence, ability, or strength that allow people to perform better and thus earn higher wage. Other argued that this is just because people of different height are treated differently due to discrimination. For example, the height requirement is directly indicated in the job advertisement, or there is a significant difference in the wage of people having different heights in the labor market, and the tall people in the job category are always more prominent than others in post promotion. A statistical analysis of about 1.058 million job advertisements in China from 2008 to 2010 found that 7.7 percent and 2.6 percent of companies had specific requirements for the appearance and height of candidates, respectively.

Objectives, Hypothese,

Objectives

Based on the existing research literature, this paper uses Chinese Family Panel Studies (CFPS2018). The data used in this study are from the 2018 Chinese Family Panel Studies conducted by the China Social Science Research Center of Peking University and funded by the "985" project of Peking University. The sample of CFPS2018 covers 29 provinces (municipalities and autonomous regions directly under the Central Government) in China. This paper selects height as the main variable, and uses the monthly wage in CFPS quantitative analysis, that is, the functional relationship between wage and height. An empirical analysis of whether height affects the wage in the Chinese labor market. And use the other information provided in the data, this paper will discuss in-depth why the height affects wage. Is it because of height related to personal advantages or because of height discrimination in the labor market?

Hypotheses

According to the research questions listed above, and coupled with the previous literature of foreign scholars, the following hypotheses are given:

Hypothesis 1: Height affects wage: There are height and monthly wage of the research objectives in the data. The results can be shown by analyzing the data.With some of the recruitment ads, there is a height requirement for employees. It can be assumed maybe that height will affect personal wage.

Hypothesis 2: The impact is larger and more significant for (i) rural areas (compared to urban areas) and (ii) western region (compared to other region). In China's rural area and western regions, which are relatively underdeveloped. And there is an unfair labor market than the others. The employers may discriminate employees with their heights. The health status of people in rural areas is also worse than in cities, so people with higher height may earn more.

Hypothesis 3: The causes of height influence wage are from the advantages of height and discrimination in the labor market both.

Literature Review
Height-Wage Research Outside China

For the height research, some Western scholars are mainly divided into two categories. The first group thinks that the influence of height on wage comes from the difference of self-condition caused by height. The second group thinks that the influence of height on wage comes from the discrimination in the labor market.

Human Capital Framework

Case and Paxson (2008) studied from the perspective of why taller people earn more, they began with some of the effects of height on growth in the early youth. The study showed that tall people also have higher cognitive abilities than ordinary people, so their corresponding abilities are relatively strong, and they are paid more than others in the labor market. This study further showed that genes play a decisive role in height, and health environment also has the intervention on height. After that, Case A, Paxson C found in British Household Panel Survey that as long as the height of men and women increased by an inch, their wage increased by 1.5% and 1.8%.

Discrimination Framework

Another type of literature emphasizes that the influence of height on wage comes from the discrimination of employers or consumers against height in the labor market. Harper (2000) used UK labor market data to study the effect of height on wage, and the wage of tall people is 5% higher than that of short

people. Moreover, for men, the gap is mainly due to discrimination by employers and consumers. Hubler (2006) used panel data from the German Socioeconomic Panel Studies from 1985 to 2004 to study full-time and part-time workers between the ages of 25 and 55. OLS regression of wage equation shows that for every 10 cm increase in height, the wage will increase by 2.8%.

Height-Wage Research in China

In terms of the existing research on the relationship between height and wage in China, the research literature is relatively little.It is also mainly divided into two aspects. One is to explain the effect of height on wage from the framework of human capital. Guo Jiqiang (2017) pointed out in his thesis that height is a signal of interpersonal skills, reflecting personal social information and social ability so that employers can choose employees with the social ability by comparing their heights.

Another is to study from the external labor market discrimination. Gao Wenshu (2009) used hukou survey data from 12 cities in China to analyze that the height affects the wage of the labor force in China's labor market, but there is no in-depth analysis of its possible reasons.

Data and Methodology

The data in this paper is Chinese Family Panel Studies (CFPS2018), and uses the monthly wage in CFPS as the dependent variable. This paper looks into examining the functional relationship between height and wage. Other relevant variables include gender, age, marital status, education, hukou (rural hukou or urban hukou), health status, BMI, intelligence, nature of employer, occupational industry, life satisfaction, confidence in the future, and personal relation.

Models and Methods

In order to investigate the effect of height on the performance of individual labor market, the regression model is set up as follows:

$$\ln\text{wage} = a_0 + a_1 height_i + \beta_1 X + \delta_i$$

lnwage is the natural logarithm of individual hourly wage rate, height is individual height, measured by horizontal value (in centimeters), x is other control variable.Like gender, age, marital status, eduy, hukou (rural hukou or urban hukou), life, confidence, relation,appearance, bmi, mathtest, wordtest. δ that affects individual wage, and it is random term. As shown in the figure, the confidence interval of linear fitting is

highly coincident, and the fitting line of higher order terms does not show an obvious downward curve, so it is reasonable to only consider the horizontal value of height.

Result of Research

It can be seen from the table above that the average value after the logarithm of wage is 2.542, and the difference between the maximum and minimum values observed in the logarithm of wage is still relatively large, which indicating that when conducting research, China's wage gap is still relatively large. From the perspective of explanatory variables, the average height of the research subjects is 166.1 cm, and the average level of education is 10.14 years. This may be related to the 9-year compulsory education practiced in China. From the perspective of cognitive ability, life satisfaction, self-confidence and interpersonal relationship, the average level of the research subjects is at the level of relative confidence in themselves. The average age of the subjects was 39.17 years old. The 65.9% of objectives come from towns and 35.1% come from rural areas. The average appearance of them is relatively good.

In order to test more factors, the article added the square of height. However, after I add square of height. It cannot show the relationship between height and wage. The data only shows that lnwage and height are not non-linear relationships. So I still choose to delete the factor of height square.

	(1)	(2)	(3)	(4)	(5)
	All objectives			Male	Female
	lnwage	lnwage	lnwage	lnwage	lnwage
height	0.0371	0.0634	0.0626	-0.0286	0.0111
	(0.7923)	(0.9535)	(0.9276)	(-0.2149)	(0.0664)
height2	-0.0001	-0.0002	-0.0002	0.0001	0.0000
	(-0.6075)	(-0.8133)	(-0.7924)	(0.2642)	(0.0085)
gender	0.2632[***]	0.2535[***]	0.2607[***]		
	(7.6515)	(5.9314)	(6.1072)		
age	0.1095[***]	0.1055[***]	0.0904[***]	0.0546[**]	0.1324[***]
	(7.6567)	(6.0646)	(4.8261)	(2.1497)	(4.7740)
age2	-0.0005[***]	-0.0005[***]	-0.0004[*]	-0.0002	-0.0006[*]
	(-2.9775)	(-2.5893)	(-1.6831)	(-0.6201)	(-1.7716)
hukou	-0.1477[***]	-0.1613[***]	-0.1616[***]	-0.1242[***]	-0.1881[***]
	(-5.4734)	(-5.0426)	(-5.0511)	(-2.8799)	(-3.9358)

	(1)	(2)	(3)	(4)	(5)
	All objectives			Male	Female
	lnwage	lnwage	lnwage	lnwage	lnwage
eat	0.0027	0.0138	0.0099	0.0038	0.0137
	(0.2344)	(0.9407)	(0.6704)	(0.1969)	(0.6009)
book	0.0001***	0.0001***	0.0001***	0.0001***	0.0001
	(3.5025)	(3.0937)	(3.2515)	(3.3899)	(1.2330)
worksize	0.0385**	0.0381*	0.0375*	0.0202	0.0653*
	(2.0481)	(1.7008)	(1.6810)	(0.6598)	(1.9566)
familysize	-0.0245**	-0.0197	-0.0232	-0.0291	-0.0157
	(-2.2267)	(-1.3695)	(-1.6176)	(-1.6152)	(-0.6740)
appearance		0.0417***	0.0385***	0.0429**	0.0268
		(3.2517)	(2.9951)	(2.4649)	(1.4151)
bmi		0.0064	0.0062	0.0090	0.0054
		(1.4964)	(1.4611)	(1.5922)	(0.8059)
marital			0.2004***	0.4219***	-0.1512
			(2.7222)	(4.3901)	(-1.5346)
healthy			0.1112*	0.1451	0.0700
			(1.7049)	(1.4397)	(0.8309)
_cons	-2.9331	-5.4335	-5.2566	3.5806	-1.8709
	(-0.7515)	(-0.9828)	(-0.9365)	(0.3162)	(-0.1395)
F	43.0218	34.8084	33.5449	15.9687	19.8590
r2_a	0.2484	0.2465	0.2484	0.2001	0.2757
N	5867	4133	4133	2248	1885

Results of Hypothesis 1

This section verifies whether the height effect wage, which is height has a significant positive effect on individual wages. And calculate the results base on OLS regression. The regression results in columns 1 to 3 show that height has a significant positive effect on wage,. Among them, the regression in the first column only controls the relative exogenous variables such as gender, age, etc. The coefficient of height is 0.0109, which indicates that given other conditions. It means for every 1 cm increase in height average hourly wage rate will increase by about 1.09%. Then, the hukou, the number of family books, and the number of people working in the family also play a significant role in the wage of the research object. The results in column 2 show that after further controlling the individual's appearance and BMI, the effect of height on wage is still significant, and the coefficient has increased. However, BMI has no significant effect on the wage of the research subjects. The third column further controls the health status and marital status of the research subjects. The results show that the effect of height on wages is still significant. The change in the impact of wage was 1.22%, a slight decrease from the second column. Columns 4 and 5 separately study men and women, and the results show that height has a greater impact on women's wages, and age only affects women's wages. Marital status, family collections, and BMI have an impact on men's wages, but not on women.

Results of Hypothesis 2

In view of the different geographical divisions in China, this article also makes a detailed analysis of the research objects in different regions. Divide China into central, eastern, and western regions. From the geographical point of view, the main first-tier cities are in the eastern coastal area, and the eastern economy is relatively developed relative to the central and western regions. The central part is generally developed, while the western part is relatively backward. According to the different economic development in the region, this article studies whether there are differences between the central, eastern, and western regions under different economic conditions. In addition, for China's unique household registration, it is specifically divided into rural and urban areas.

Results of Hypothesis 3

What causes height to affect wages? It may be due to differences in human capital such as individual education level, cognitive ability, and some other abilities. This part verifies the difference in human capital. After controlling for education level, cognitive ability, and some non-cognitive ability, whether the effect of height on wage should be significant. To verify this idea, this article refers to the "intermediary role" model (Wang Zhibo and Li Changhong, 2016) to test whether the existence of height discrimination is due to higher height by controlling variables such as individual years of education, cognitive ability, and non-cognitive ability. The person also has a higher level of education, cognitive ability, or some non-cognitive ability. Cognitive ability (cog) here is the average value of the word phrase test score and the math test score. Other non-cognitive abilities consist of satisfaction with life, confidence in yourself, and interpersonal relationships.

The final result does not support the potential impact channel of human capital differences. And further explains that the reason may be the discrimination by the Chinese labor market in height and wage and it may be mainly from discrimination in the labor market. This potential channel will be discussed later.

Conclusion

The research results above show that height has a significant impact on labor wage and this effect is different between different genders and regions, and the impact of women is greater than that of men. And regional differences have no effect on men, but the opposite is true for women. The reason for this phenomenon is that people with taller heights are more satisfied with their lives. Women also have an advantage in interpersonal relationships due to height. As a result, wage increases with height. But most of the reasons are because different types of enterprises in the labor market have a special preference for the height of the labor force. Therefore, it leads to the phenomenon that height affects wages.

In addition, family background plays a very important role in the wage of the labor force, including the number of books in the family, the number of years of education of the parents, and the number of the family labor force all directly affect the wage. In terms of the industry type, the first and secondary industries have significant requirements for the height of men. The reason behind it may be that men mainly pay for labor in the first and secondary industries. The research in the article also shows that physical health status (BMI) only affects men's wage. The tall males represent a healthier workforce in the first and second industries.

REFERENCES

Case, A., & Paxson, C. (2008). Stature and status: Height, ability, and labor market outcomes. *Journal of political Economy*, *116*(3), 499-532.

Chai, G. (2011). Gender Wage Gaps and Discrimination for College Graduates during the Market-Oriented Reform [J]. *South China Journal of Economics*, *3*.

Gao Wenshu. (2009). Health human capital investment, height and wage compensation. Chinese Population Science, 3, 76-86.

Hamermesh, D. S., & Biddle, J. E. (1993). *Beauty and the labor market* (No. w4518). National Bureau of Economic Research.

Heckman, J. J., Lochner, L. J., & Todd, P. E. (2003). *Fifty years of Mincer earnings regressions* (No. w9732). National Bureau of Economic Research.

Heineck, G. (2005). Up in the skies? The relationship between body height and earnings in Germany. *Labour*, *19*(3), 469-489.

Hensley, W. E., & Cooper, R. (1987). Height and occupational success: a review and critique. *Psychological Reports*, *60*(3), 843-849.

Hübler, O. (2006). The nonlinear link between height and wages: an empirical investigation.

Hur, Y. M., & Shin, J. S. (2008). Effects of chorion type on genetic and environmental influences on height, weight, and body mass index in South Korean young twins. *Twin Research and Human Genetics*, *11*(1), 63-69.

Judge, T. A., & Cable, D. M. (2004). The effect of physical height on workplace success and wage: preliminary test of a theoretical model. *Journal of Applied Psychology*, *89*(3), 428.

Lundborg, P., Nystedt, P., & Rooth, D. O. (2010). No country for fat men? Obesity, earnings, skills, and health among 450,000 Swedish men.

Persico, N., Postlewaite, A., & Silverman, D. (2004). The effect of adolescent experience on labor market outcomes: The case of height. *Journal of Political Economy*, *112*(5), 1019-1053.

Schick, A., & Steckel, R. H. (2010). *Height as a proxy for cognitive and non-cognitive ability* (No. w16570). National Bureau of Economic Research.

Schultz, T. P. (2002). Wage gains associated with height as a form of health human capital. *American Economic Review*, *92*(2), 349-353.

Sohn, K. (2013). Monetary and Nonmonetary Returns to Education in I ndonesia. *The Developing Economies*, *51*(1), 34-59.

Sohn, K. (2015). The height premium in Indonesia. *Economics & Human Biology*, *16*, 1-15.

Wenshu, G. (2009). Health Human Capital Investment, Height and Wages: An Empirical Study Using Household Survey Data from 12 Chinese Cities [J]. *Chinese Journal of Population Science*, *3*.

ZHANG, Q. J. K. (2013). "Economics of Beauty" in China's Labor Market: Does Stature Matter?. *China Economic Quarterly*, (3), 12.

ZHANG, K., TAO, D., & JIANG, Q. (2013). Sibling Competition and Education Attainment: Evidence from Rural China. *Education & Economy*, (6), 7.

Zhang Xiaoyun, Xin Binghai, & Du Liqun. (2018). Can marketization eliminate discrimination? Evidence from "height premium". Financial Research, 44 (5), 140-152.