

Impact of Minimum Wage on Farmers' Human Capital Investment

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Abstract: This paper matches the 2012 economic and social survey project data of the western minority regions with the macroeconomic data such as the minimum wage, and tests the specific impact of the minimum wage on farmers' human capital investment. The study found that for every one standard deviation of the minimum wage, the probability of farmers choosing government training, corporate training and self-training will be reduced by 75.57%, 7.75% and 16.69%. At the same time, the minimum wage helps to reduce the frequency of smoking and the frequency of alcohol abuse among farmers, and promotes the improvement of individual health status of farmers. Compared with female farmers, the minimum wage has a more significant negative impact on the frequency of male farmers' drinking; compared with low-educated farmers, the minimum wage has a more significant negative impact on the frequency of alcohol abuse among highly educated farmers.

1. Introduction

With the advancement of rural marketization reform, the flow of labor factors between urban and rural areas and between industries has been significantly enhanced. The differences in farmers' technical level and market participation ability have led to a significant differentiation between farmers' income structure and employment structure, mainly in family farming. The proportion of income and the proportion of employment in the primary industry continued to decline. The proportion of non-agricultural employment of farmers continued to increase and non-agricultural incomes leaped to the main position, thus different groups of farmers with different levels of employment. However, at this stage, the impact of China's demographic changes is gradually becoming dominant, labor supply continues to run at a high level, and the employment situation is at a high level. The wage gap between laborers with different skill levels is expanding. Compared with the urban labor force, the education level and labor productivity of the peasant group are relatively low, and they do not have the competitive advantage of employment.

According to China Modernization Report 2018: Research on Industrial Structure Modernization, a new round of scientific and technological revolution and industrial revolution are changing China's industrial form and employment prospects. The proportion of knowledge industry will rise and become a leading industry. The technology-driven employment structure has changed, and the shortage of human capital has become a major obstacle to restricting farmers from entering higher-level jobs. In reality, affected by many factors such as resource endowment, urban-rural differences, and policy interventions, farmers' job-seeking positions are subject to many restrictions on the labor market and external policies. The minimum wage policy has a more direct impact on the vulnerable group of farmers.

The minimum wage regulation has long been widely recognized as an important reason for disrupting the equilibrium of the competitive labor market and curbing the employment of low-skilled workers. In recent years, the minimum compensation limit for China's minimum wage has been continuously refreshed, which has made the job market more demanding on the quality and skill level of the labor force. In the employment environment where the minimum wage is rising, both employers and employees will carefully consider the wage level in the negotiation that

is easy to achieve maximum benefits. Affected by the employment probability and wage level in the labor market, if farmers choose to maintain the original human capital stock, it is not only difficult to overcome the pressure of enterprises to increase working hours or labor intensity caused by the increase in minimum wage, it is more difficult to compete in the labor market where the demographic dividend is lost. Other technical positions.

The meager human capital stock of farmers cannot cope with the reality that labor market demand is increasingly intensified. Strengthening human capital investment is a key path for farmers to break the dilemma of labor market segmentation and broaden employment channels. Then the minimum wage is an important factor directly affecting the employment income of farmers, or is it promoting or restricting the human capital investment decision of farmers? What factors have a significant impact on the relationship between the two? These are all issues that deserve to be explored in depth. In view of this, this paper takes the peasant groups in the western minority areas as the research object, and examines the relationship between the minimum wage and the peasant human capital investment, in order to make a reasonable analysis of the training needs of farmers in the labor market and the formulation of the domestic minimum wage policy. And suggestions, to provide empirical support for promoting the structural reform of China's agricultural supply side and filling the shortcomings of human resources.

2. Empirical Research

2.1. Model Setting

In this paper, we refer to the study of Horn et al. (2017) and Han Zhaozhou and Wang Yakun (2012), using the minimum wage data of the seven provinces in 2012, the training methods of farmers, risk health behaviors, individual characteristics and other sample data. As an analytical variable, the following measurement model was established to observe the impact of minimum wage on farmers' training methods and risk health behaviors, and draw relevant conclusions and countermeasures.

$$training_i = \alpha_0 + \alpha_1 hw_c + G_1 X_i + e_i \quad (1)$$

$$smoke_i = \beta_0 + \beta_1 hw_c + G_2 X_i + e_i \quad (2)$$

$$alcoholic_i = c_0 + c_1 hw_c + G_2 X_i + e_i \quad (3)$$

Among them, $training_i$, for the training methods of farmers, this paper uses the question of “whether or not they have received professional skills training” in the questionnaire. The government training assignment (training1) is 1, the enterprise training (training2) is assigned 2, and the farmer self-training (training3) is assigned a value of 3. The risk health behavior of farmers is defined in two aspects. The frequency of smoking for farmers, $smoke_i$, is defined as how many cigarettes are smoked by farmers every day. The frequency of alcohol abuse for farmers, $alcoholic_i$, is defined as the frequency of weekly drinking by farmers. hw_c , means the minimum wage for part-time hours in districts and counties in 2011. Represents a set of control variables based on the individual level of the peasant, including: (1) age; (2) gender; (3) marital status; (4) education level; (5) National heterogeneity; (6) income satisfaction. The definition of each main variable is shown in Table 1.

Table 1 Description of Variables

Variable type	English expression	Variable description	Observation	Mean	S.D.	Minimum	Maximum
Interpreted variable	training	Government training has a value of 1, corporate training has a value of 2, and farmer self-training has a value of 3.	1,643	1.3968	0.7441	1.0000	3.0000
	smoke	Number of cigarettes smoked per day by farmers	10,412	1.3199	2.6446	0.0000	60.0000
	alcoholic	Farmers drinking frequency every week	10,412	6.0429	8.8935	0.0000	70.0000
Explanatory variables	hw	Minimum hourly wage (yuan)	10,412	6.8537	1.2361	4.5000	8.6670
Explanatory variables at the individual feature level	gender	Male=1, female=0	10,412	38.3473	12.1271	18.0000	60.0000
	age	18-60 years old	10,412	0.6138	0.4869	0.0000	1.0000
	married	Married=1, other=0	10,412	0.7800	0.4143	0.0000	1.0000
	education	High school and above education=1, high school or below education=0	10,412	0.1770	0.3817	0.0000	1.0000
	nation	Han nationality=1, minority=0	10,412	0.4213	0.4938	0.0000	1.0000
	income	Satisfied = 1, more satisfied = 2, generally = 3, not satisfied = 4, not satisfied = 5	1,643	1.3968	0.7441	1.0000	3.0000

2.2. Model Output Results

In this paper, the sequential logit regression model is used to test the specific effect of the

minimum wage (hw_c) on the training method of the farmers. The list in Table 3 (1) only joins the minimum wage for model regression, and the column (2) controls the individual characteristics of the farmers. variable. The results show that at the level of 1% significance, the minimum wage has a negative impact on the way farmers are trained. Table 4 reports the average marginal effect of the minimum wage on farmers' training methods: for every one standard deviation of the minimum wage, the probability of farmers choosing government training, corporate training and self-training will be reduced by 75.57%, 7.75% and 16.69%. The regression results of other variables were in line with expectations.

Secondly, this paper uses LPM model to test the specific effects of minimum wage on farmers' risk health behaviors. Columns (3)-column (4) in Table 3 are the regression results of minimum wages to farmers' smoking frequency, column (5)-column (6) The regression result of the frequency of the minimum wage dui farmers. Specifically, columns (3) and (5) of Table 3 are only added to the minimum wage for model regression, and columns (4) and (6) control the individual characteristic variables of farmers. The results show that at the level of 1% significance, the minimum wage has a negative impact on farmers' smoking frequency, and the negative impact is more significant after adding individual characteristic variables. The results of columns (5) and (6) indicate that the minimum wage also has a negative impact on the frequency of smoking and the frequency of alcohol abuse among farmers, that is, the increase in minimum wage helps to reduce the frequency of smoking and the frequency of alcohol abuse among farmers, and promotes the improvement of individual health status of farmers.

Table 2 Minimum Wage and Farmers' Human Capital Investment: Regression Results

variables	training		smoke		alcoholic	
	(1) Ologit	(2) Ologit	(3) Ols	(4) Ols	(5) Ols	(6) Ols
hw	-0.1481*** (0.0286)	-0.1323*** (0.0314)	-0.0970** (0.0554)	-0.2098*** (0.0598)	-0.4438*** (0.0205)	-0.4004*** (0.0190)
age		-0.0260*** (0.0047)		0.0409*** (0.0075)		0.0280*** (0.0024)
gender		0.5926*** (0.0894)		9.5936*** (0.1515)		1.8422*** (0.0482)
married		-0.3109*** (0.1173)		1.9418*** (0.2218)		0.4829*** (0.0706)
education		-0.0590 (0.1059)		-1.2551*** (0.2035)		-0.1085* (0.0648)
nation		0.3956*** (0.0868)		0.7476*** (0.1508)		-0.2941*** (0.0480)
Observations	3583	3183	17019	10412	10412	10412
Pseudo R2	0.0510	0.4470				
Cons		-1.8765*** (0.2118)	6.1961*** (0.3900)	-1.5820*** (0.4987)	4.3614*** (0.1429)	1.6282*** (0.1588)
R-squared			0.0890	0.2934	0.0429	0.1902

Note: *, **, *** indicate significant levels at 10%, 5%, and 1%, respectively; 2 brackets () indicate robustness standard errors. Unless otherwise noted, the following tables are identical and will not be listed.

Table 3 Minimum Wage and Farmers' Training Ways: Average Marginal Effect

variables	(1) training1	(2) training2	(3) training3
hw	0.7526***	0.0806***	0.1668***
	(0.0074)	(0.0048)	(0.0064)
Observations	3183	3183	3183

2.3. Subsample regression results

In order to further explore the heterogeneous impact of the minimum wage increase on farmers' human capital investment, we first divide the overall sample into two sub-samples by male farmers and female farmers. The results in Table 5 show that compared with male farmers, the minimum wage has a more significant negative impact on the way women farmers are trained and is significant at the 1% level. However, compared with female farmers, the minimum wage has a more significant negative impact on the frequency of male farmers' drinking and is significant at the 1% level. Gender heterogeneity is not reflected in the relationship between the minimum wage and the frequency of farmers smoking. A possible explanation for this is that the male farmers' own adaptability to the social environment and the pursuit of personal goals will increase the negative impact of the minimum wage on farmer training. The increase in the minimum wage will encourage male farmers to participate in the work in order to seek more salary, so the frequency of drinking will be significantly reduced.

Table 4 Minimum Wage and Farmers' Human Capital Investment: Subsample Regression of Gender

variables	training		smoke		alcoholic	
	(1) male	(2) female	(3) male	(4) female	(5) male	(6) female
hw	-0.0326	-0.3115***	0.2063	0.0488	-0.5923***	-0.0375
	(0.0391)	(0.0499)	(0.2066)	(0.0771)	(0.0505)	(0.0264)
age	-0.0271***	-0.0240***	0.0597**	-0.0035	0.0308***	0.0067*
	(0.0057)	(0.0079)	(0.0304)	(0.0116)	(0.0075)	(0.0039)
married	-0.2142	-0.4180**	4.0858***	-0.7036**	0.9165***	-0.0407
	(0.1445)	(0.1989)	(0.8451)	(0.3283)	(0.2074)	(0.1126)
education	-0.1203	-0.0669	-0.9481	-0.3700	-0.1616	-0.0169
	(0.1245)	(0.1971)	(0.6484)	(0.2891)	(0.1605)	(0.0996)
nation	0.3460***	0.5267***	2.8365***	0.4150*	-0.5906***	-0.0298
	(0.1045)	(0.1514)	(0.5602)	(0.2239)	(0.1406)	(0.0768)
Observations	1946	1276	1323	549	1142	528
Pseudo R2	0.0190	0.0481				
Cons			2.1667	0.6567	4.2661***	0.2062
			(1.6995)	(0.6220)	(0.4137)	(0.2129)
R-squared			0.0735	0.0183	0.1762	0.0104

Secondly, we divided the overall sample into two sub-samples of high education and low education according to high school and above and high school education. The results in Table 6 show that compared with highly educated farmers, the minimum wage has a more significant negative impact on the training of low-education farmers and is significant at the 1% level. Compared with low-educated farmers, the minimum wage has a more significant negative impact on the frequency of alcohol abuse among highly educated farmers and is significant at the 1% level. At the same time, the impact of high or low education on the relationship between the minimum wage and the frequency of farmers smoking is not significant. Because the degree of education is

the key factor determining the difference of skill level among labor groups, it is also an important reason for farmers to face employment discrimination in the labor market (Meng Fanqiang et al., 2018). Farmers with higher education levels have a deeper understanding of social identity and changes in the market employment environment. The rise in minimum wages will cause farmers to move to sectors that are not subject to minimum wage standards, resulting in reduced willingness to train skills (Welch, 1974). The pressure from the rise in the minimum wage will also motivate farmers to work and relatively constrain the occurrence of risky health behaviors.

Table 5 Minimum Wage and Farmers' Human Capital Investment: Subsample Regression of Education

	training		smoke		alcoholic	
	(1) high	(2) low	(3) high	(4) low	(3) high	(4) low
hw	-0.0326	-0.3115***	0.2063	0.0488	-0.5923***	-0.0375
	(0.0391)	(0.0499)	(0.2066)	(0.0771)	(0.0505)	(0.0264)
age	-0.0271***	-0.0240***	0.0597**	-0.0035	0.0308***	0.0067*
	(0.0057)	(0.0079)	(0.0304)	(0.0116)	(0.0075)	(0.0039)
married	-0.2142	-0.4180**	4.0858***	-0.7036**	0.9165***	-0.0407
	(0.1445)	(0.1989)	(0.8451)	(0.3283)	(0.2074)	(0.1126)
education	-0.1203	-0.0669	-0.9481	-0.3700	-0.1616	-0.0169
	(0.1245)	(0.1971)	(0.6484)	(0.2891)	(0.1605)	(0.0996)
nation	0.3460***	0.5267***	2.8365***	0.4150*	-0.5906***	-0.0298
	(0.1045)	(0.1514)	(0.5602)	(0.2239)	(0.1406)	(0.0768)
Observations	1946	1276	1323	549	1142	528
Pseudo R2	0.0190	0.0481				
Cons			2.1667	0.6567	4.2661***	0.2062
			(1.6995)	(0.6220)	(0.4137)	(0.2129)
R-squared			0.0735	0.0183	0.1762	0.0104

3. Research Conclusions and Enlightenment

This study focuses on external policy regulation, matching the 2012 economic and social survey project data of the western minority regions with the macroeconomic data such as the minimum wage, and empirically tests the impact mechanism of the minimum wage on farmers' training. The study found that the minimum wage increase has a significant negative impact on farmers' training. The specific performance is that the minimum wage is increased by an unit standard deviation. The probability of farmers choosing government training, corporate training and self-training will be reduced by 75.57%, 7.75% and 16.69%. At the same time, the minimum wage helps to reduce the frequency of smoking and the frequency of alcohol abuse among farmers, and promotes the improvement of individual health status of farmers.

The effect of gender heterogeneity on the relationship between the minimum wage and the frequency of farmers' smoking is reflected in the fact that compared with male farmers, the minimum wage has a more significant negative impact on the way women farmers are trained and is significant at the 1% level. However, compared with female farmers, the minimum wage has a more significant negative impact on the frequency of male farmers' drinking and is significant at the 1% level. The heterogeneity of education level in the relationship between the minimum wage and the frequency of farmers smoking is reflected in: compared with highly educated farmers, the minimum wage has a more significant negative impact on the training methods of low-education farmers. The level of % is significant. Compared with low-educated farmers, the minimum wage has a more

significant negative impact on the frequency of alcohol abuse among highly educated farmers and is significant at the 1% level. At the same time, the impact of gender and education on the relationship between minimum wage and farmers' smoking frequency is not significant.

Based on the above conclusions, this paper argues that the government should pay attention to the timeliness of the impact of the minimum wage on different labor groups and social strata, and rationally apply various policy tools to improve the current situation of market resource mismatch, and help farmers adapt to the current economic restructuring, employment structure adjustment, and employment. It is a real change such as the total high position. The government should increase investment in agricultural science and technology service system and rural talent team construction, actively connect with institutions of higher learning, research institutes, and industrial technology innovation and transformation platforms to help farmers improve their professional skills and self-development capabilities. Farmers should actively cultivate the concept of investment and consumption of vocational and technical continuing education, flexibly apply information technology and online media to participate in skills training in response to the skills needs of different employment positions, and continuously improve their employability and career transformation ability.

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