

The Effect of Non-cognitive Ability on Salary: Based on the Mincer Equation

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Abstract: In recent years, digitalization has gradually become the core strategic direction of global technological change. Therefore, it is necessary to build a new human capital system that adapts to the needs of skills, especially focusing on the cultivation and development of individual non-cognitive abilities. The data in this article comes from the 2018 database of China Family Panel Studies. Through the Ordinary Least Squares method, this paper analyzes the impact of non-cognitive abilities on the salary of employees in private enterprises. The regression equation is based on the Mincer equation. The results show that non-cognitive abilities have a significant positive effect on labor salary. Further research find that conscientiousness has the strongest explanatory power, followed by agreeableness and neuroticism. And on this basis, this paper puts forward targeted policy recommendations. For example, companies should actively carry out employee training on non-cognitive abilities. Employees need to actively strengthen their non-cognitive ability training.

1 INTRODUCTION

Today, employees not only need to face more frequent technological changes, but also need to face more diverse needs for interpersonal cooperation. Therefore, it is necessary to build a new human capital system that adapts to the needs of skills, especially focusing on the cultivation and development of individual comprehensive ability. As an important part of individual ability, non-cognitive ability directly determines whether a person can succeed.

Scholars' research perspectives on Human Capital Theory have also changed from the traditional perspectives of education and health to the ability. Theodore W. Schultz, Gary Stanley Becker and others established the traditional Human Capital Theory, a large number of studies have shown that human capital investment can promote economic growth, and from a micro perspective, people's investments in education and health can significantly affect their salary. In recent years, Heckman proposed a new theory of human capital with "ability" as the core, which consists of two parts, cognitive ability and non-cognitive ability, to explore the effect of ability on person and society. The two core elements of education and health in traditional human capital

theory will affect individual economic behavior through the accumulation of ability. Therefore, scholars have mainly focused on the formation mechanism of ability and the impact of ability on the individual economic behavior. First the antecedent variables of ability included family background and school education. Wang Huimin found that children with higher family socioeconomic status were more likely to receive preschool education, and children with preschool education had higher cognitive and non-cognitive abilities than children without preschool education. Li Bo found that parent-child reading, parent-child activities, parent-child communication and homework supervision all had significant positive effects on children's non-cognitive abilities. Second, outcome variables for ability included the career choice and the personal salary. Sheng weiyan found that skilled employees with higher non-cognitive abilities were more likely to enter high-end service industries, and employees in high-end service industries also had higher returns on non-cognitive abilities. Li Xiaoman found that after controlling for other traditional human capital variables, cognitive ability and non-cognitive ability could also show a significant positive effect on salary for low-skilled and medium-skilled workers.

Up to now, most scholars divided the research objects of non-cognitive ability into high education

and low education. This paper focuses the research object on a specific sector, which is the private sector, and puts forward more targeted policy recommendations. Because, in China, private enterprise employees are in a more intense talent competition environment, this research has high practical meaning. Therefore, based on “The Five-Factor Model” (OCEAN), this paper analyzes the impact of non-cognitive ability on the salary of employees in private enterprises.

2 MATERIAL AND METHOD

The data in this article comes from the 2018 database of China Family Panel Studies, which cover 25 provinces and autonomous regions in mainland China and can be regarded as a relatively representative national database. The purpose of this paper is to explore the impact of non-cognitive abilities on the salary of employees in private enterprises. Therefore, this study mainly uses the survey data of the adult sector.

According to the research needs, the research data are processed as follows: (1) Keeping samples of employment; (2) Keeping samples aged 18-65; (3) Excluding extreme samples with monthly salary below 1,000 yuan, as well as obvious outliers and missing values of other core variables in this paper.

2.1 Measurement of Non-cognitive Ability

When studying non-cognitive abilities and labor income, widely accepted survey methods include the Internal and External Control Scale (Rotter, 1973), the Self-Esteem Scale (Rosenberg, 1978), and the Five-Factor Model (Costa, 1992). Considering the high applicability of the Five-Factor Model, this paper uses the Five-Factor Model to measure non-cognitive abilities based on the questions of the CFPS questionnaire. The Five-Factor Model includes openness, conscientiousness, extraversion, agreeableness, and neuroticism.

The specific variable design is shown in Table 1 and explained as follows: (1) Each dimension involves 2 questions, and the average score after the sum of these two questions is the score of the dimension; (2) This article only deals with 4 of the 5 dimensions of non-cognitive ability. Any text or material outside the aforementioned margins will not be printed.

Table 1: The Five-Factor Model.

The Five-Factor Model	Variable design
Conscientiousness	The confidence in your future
	A sense of accomplishment
Agreeableness	Relationship
	Not hated by others
Neuroticism	Life cannot go on
	Feel upset
Extraversion	Adventurous
	Happy life

2.2 Construction of the Empirical Model

Through the Ordinary Least Squares method, this paper analyzes the relationship between non-cognitive ability and the salary of private enterprise employees. The regression equation is based on the Mincer equation by adding non-cognitive ability variables.

$$\ln w_i = \alpha + \beta \times \text{noncognitive}_i + \sum_{n=1}^N \gamma \times x_{in} + \varepsilon_i \quad (1)$$

Among them, $\ln w_i$ is the logarithm of the monthly salary of the employee, α is a constant term, noncognitive_i is the non-cognitive ability measure constructed under the framework of the “The Five-Factor Model” in this paper, x_{in} is a series of other factors that affect salary, including age, education, gender, health. The definitions of all variables are shown in Table 2.

Table 2: Variable definition.

Variable type	Variable name	Indicator name	Variable definition
Dependent variable		log of monthly salary	Log of monthly salary
Independent variable	Non-Cognitive ability	Conscientiousness	The average score after the sum of the dimension
		Agreeableness	The average score after the sum of the dimension
		Neuroticism	The average score after the sum of the dimension

Control variable	Extraversion	The average score after the sum of the dimension
	Non-Cognitive ability	The score after the sum of the four dimensions
	Gender	Male=1; Female=0
	Health	From 1 to 7 points
	Age	Age
	Registered permanent residence	Non-agricultural registered permanent residence=1 ; Agricultural registered permanent residence=0
	Education	Elementary school=1; Junior high school=2; High school/Technical school=3; Junior college and above=4

3 RESULT AND DISCUSSION

The regression results of the model are shown in Table 3, and the non-cognitive ability has a significant promoting effect on salary. Model 1 to Model 4 are the regression results of adding 4 different dimensional variables respectively. Extraversion has no significant effect on the salary private-sector employees. Conscientiousness, agreeableness, and neuroticism are all remarkable at level 1%, and the salary effects were 5.2%, 2.6%, and -6.2%, respectively. These suggest that less neuroticism, more agreeableness, and more conscientiousness can significantly increase the salary of private-sector employees. Model 4 includes variables of four dimensions at the same time, and the salary effects of the three dimensions of variables all decrease significantly. Only conscientiousness is still remarkable at the 1% level, and neuroticism is

remarkable at the 5% level. This may be due to the collinearity of non-cognitive abilities in different dimensions.

In Model 5, the total non-cognitive ability index is remarkable at the 1% level, again proving that non-cognitive ability has a significant impact on salary. Among the control variables, males have more obvious salary advantages, younger employees have more obvious salary advantages, employees with higher education level have higher salary.

Table 3: Regression result.

Variable	1	2	3	4	5	6
Conscientiousness	0.05 ***				0.04 ***	
	(0.12)				(0.01)	
Agreeableness		0.03 ***			0.01	
		(0.09)			(0.09)	
Neuroticism			-0.06 ***		-0.05 **	
			(0.02)		(0.02)	
Extraversion				-0.02 4	-0.00 3	
				(0.019)	(0.012)	
Non-Cognitive ability						0.03 ***
						(0.06)
Gender	0.39 ***	0.39 ***	0.39 ***	0.39 ***	0.38 ***	0.39 ***
	(0.018)	(0.018)	(0.019)	(0.018)	(0.018)	(0.018)
Health	0.00 8	0.00 9	0.00 8	0.00 9	0.00 6	0.00 8
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Age	-0.00 8 ***	-0.00 8 ***	-0.00 8 ***	-0.00 8 ***	-0.00 8 ***	-0.00 8 ***
	(0.08)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Registered permanent residence	0.00 4	0.00 02	0.00 1	0.00 1	0.00 2	0.00 1
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Education	0.12	0.12	0.12	0.12	0.12	0.12

	***	***	***	***	***	***
	(0.0 11)	(0.0 11)	(0.0 11)	(0.0 11)	(0.0 11)	(0.0 11)
Constant term	7.59 ***	7.66 ***	7.89 ***	7.76 ***	7.65 ***	7.56 ***
	(0.0 84)	(0.0 81)	(0.0 79)	(0.0 73)	(0.1 01)	(0.0 96)

*p<0.1; **p<0.05 ***p<0.01

In order to more accurately study the impact of non-cognitive abilities of various dimensions on employees' salary, this paper reports the standardized coefficients of three dimensions that have a significant impact on employees' salary. The explanatory power of conscientiousness, over agreeableness and neuroticism, has the most significant effect. If employees of private enterprises want to increase their salary, they need to pay more attention to the improvement of their sense of responsibility. At the same time, it is also very important to get along well with colleagues and teams. In a tense working atmosphere, it is also necessary for employees to maintain emotional stability to raise their salary.

Table 4: Comparison of non-cognitive ability.

	Conscientio- us-ness	Agreeable- ness	Neuro- ticism
OLS coefficient	0.052	0.026	-0.062
Standar- dized coefficient	0.076	0.055	-0.052
R-squared	0.221	0.218	0.217

4 CONCLUSION AND SUGGESTION

The New Human Capital Theory has confirmed that both cognitive and non-cognitive abilities have a significant impact on people's success in achieving socioeconomic status. Based on the existing research ideas, this paper uses the "big five personality" model, and focuses on the private enterprise employees. Because, in China, private enterprise workers are in a more intense competitive environment, and private enterprise managers are more likely to dismiss employees with insufficient ability due to the harsh external environment. This study adopts an empirical analysis method to explore the impact of non-cognitive abilities on the salary of workers in private enterprises, and draws the following conclusions: (1) Non-cognitive ability

have a significant impact on employees' salary. (2) Among them, conscientiousness has the strongest explanatory power, followed by agreeableness and neuroticism.

Therefore, this paper proposes the following policy recommendations. (1) Schools should introduce the cultivation of students' non-cognitive abilities in teaching. At the same time, schools should pay attention to the assessment of non-cognitive ability teaching in order to better develop students' non-cognitive ability. Flexible and interesting classroom models require high-level teaching staff, therefore, schools should increase the training of teachers on non-cognitive ability teaching. (2) When recruiting, private enterprises should focus on examining the communication and teamwork ability of employees, as well as their sense of responsibility and love for their work. At the same time, companies should actively carry out employee training on non-cognitive abilities; and design clear career plans for employees, because with goals, employees will be more motivated to complete their work. Also, Enterprises should pay attention to cultivating employees' personality qualities of passion and selfless dedication. (3) Employees need to actively strengthen their non-cognitive ability training and accumulate human capital, so that they can find better job opportunities and obtain higher returns on salary.

There are still some shortcomings in this paper. At the same time, the non-cognitive ability variables that can be constructed in this paper are limited, such as the openness to experience dimension, which cannot be observed.

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