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Impact of educational mismatches on the job quality -- empirical analysis based on Chinese Family Panel Studies

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Abstract: Employment is an important issue related to the national economy and people's livelihood, and in the context of the expansion of higher education, the impact of education mismatch on the quality of labour force employment cannot be ignored. The article adopts the 2020 CFPS micro survey data to analyse the mechanism of the impact of education mismatch on employment quality. The empirical regression results based on panel data show that in terms of wage income, over-educated people suffer from wage penalty effects; regarding job satisfaction, the regression results of ordered probit model reflect that over-educated people have lower job satisfaction. Therefore, how to rationally allocate educational resources and improve the status quo of educational mismatch is of great significance in promoting the improvement of employment quality and realizing the high-quality development of the economy in China.

Key words: educational mismatch; job quality; wage; job satisfaction; ordered probit model

1 Introduction

Since 2008, China has been implementing the policy of expanding postgraduate enrolment. In February 2020, the Ministry of Education once again proposed to expand the enrollment of master's degree students by 189,000 students in 2021, and the introduction of this expansion policy has once again attracted widespread attention from society. Under the global economic impact brought about by the COVID-19, the unemployment rate in the labour market has soared, and the goal of "stabilizing employment" has become particularly crucial. While the resumption of work and production has proceeded smoothly, the policy of expanding enrolment has, to a certain extent, boosted domestic demand, raised the educational level of individuals and eased the pressure on employment. However, we cannot ignore the labour market education mismatch brought about by the expansion policy. On the one hand, the policy of expanding university enrollment has provided enterprises with a large number of highly educated talents and raised the level of human capital in the labour market. On the other hand, the demand in the labour market has not increased significantly. Highly educated talents can only choose to lower their job requirements in the fierce competition in the market, and eventually enter the jobs that require less education. This educational mismatch phenomenon not only reflects the underutilization of human resources, thus affecting the performance of enterprises [1] and limiting the country's economic potential, but also brings individuals lower labour remuneration, lacking promotion opportunities and doubting the meaning of their work, which significantly reduces the quality of employment [2]. This paper explores the impact mechanism of education mismatch on

job quality by analyzing relevant theories, and also empirically examines it using the Chinese Family Panel Studies (CFPS) micro-database, with a view to providing research references for the rational allocation of human resources and the improvement of job quality.

Currently, much of the research on over-education in China focuses on the monetary returns to education, but there is less literature that focuses on the impact of over-education on non-monetary returns [3]. Therefore, the research contribution of this paper lies in the following: according to the classical theories such as human capital theory and the theory of adaptation between human and environment, this paper analyses how education mismatch affects the job quality from the perspectives of the benefits of education, psychological needs and one's own expectations, etc. Most of the existing studies on education mismatch originate from western countries, so exploring the impact of education mismatch on employment quality based on China's institutional context has Chinese characteristics.

2 Literature review and research hypotheses

The impact of education mismatch on job quality is mainly discussed in terms of two dimensions: wage income and job satisfaction.

2.1 Education mismatch and wage earnings

At present, the impact of education mismatch on income is relatively well researched. First, according to the classical human capital theory [4], labour compensation is determined by human capital. Overeducated individuals who have increased their human capital through investment in education should have higher labour remuneration, but factors such as segmentation of the labour market have led to a temporary imbalance between supply and demand, hence the phenomenon of educational mismatch. However, the theory does not explain the persistence of over-education and some scholars have proposed the job competition theory. The theory suggests that earnings do not depend on human capital, but on the characteristics and requirements of the job. That is to say, wages are not paid according to educational attainment, but according to the productivity of the job. People with different levels of education but working in the same job have the same productivity and therefore the same income, i.e. the undereducated may have the same income as the overeducated [5]. Distributional theory [6] combines the ideas of the first two theories by assuming that the returns to human capital depend both on the individual's human capital and on the match between the individual and the job. Wages are neither exclusively related to educational attainment and other human capital nor to the nature of the job itself. The theory suggests that the skills of the overeducated may be underutilized, resulting in lower productivity and therefore lower wages compared to the moderately educated [7]. Taken together, the wage differentials associated with educational mismatches are related to job competition in the labour market on the one hand, and individual job seekers' human capital heterogeneity on the other. Accordingly, Hypothesis I: Overeducated individuals suffer a wage penalty compared to moderately educated individuals.

2.2 Educational mismatch and job satisfaction

According to the demand-ability matching theory, low-education jobs tend to represent jobs of a lower-level nature, which leads to overeducated people not having their psychological needs met at work, having difficulty in exercising their skills, and experiencing a significant decrease in satisfaction with all aspects of their jobs [8], and severe educational mismatches are even sufficient to counteract the benefits of academic qualifications in increasing job satisfaction [9]. Educational mismatches may also trigger a sense of psychological 'poverty'. When workers assess their entitlements in the workplace, overeducated workers experience a sense of deprivation and unfairness when compared to moderately educated workers, which in turn affects job satisfaction and leads to a decrease in the quality of work [10].

Hypothesis II: Job satisfaction is higher among those who are undereducated compared to those who are moderately educated.

3 Data sources and description of variables

3.1 Data sources

In this paper, the 2020 microdata from the China Family Panel Study (CFPS) of Peking University is used for statistical analysis. The survey covers a wide range of social, economic, demographic, educational and health fields, and is a national, large-scale, multidisciplinary social tracking survey. The survey sample covers 25 provinces/municipalities/autonomous regions, and the questionnaire covers family, personal, work, education and other information, which meets the needs of this study. This paper takes employed workers as the research object and eliminates samples that do not meet the age of the labour force and duplicate or missing samples during the screening process, finally obtaining 1,047 valid samples.

3.2 Selection of variables

At present, research on the quality of employment has not yet formed a unified measurement index. The reason is that the quality of employment involves multiple dimensions. In terms of variable selection, income, as the primary selection criterion for individual employment, measures the quality of employment from an objective perspective. Job satisfaction is able to measure job quality more directly from the mental level [11][12], which is used as a complementary indicator to measure the quality of employment. Drawing on Verdugo (1989), the concept of educational mismatch is presented as a dummy variable. Among the specific indicators, the mismatch is defined as a mismatch between one's own qualifications and the qualifications required for the job. This paper chooses the self-assessment method as its measurement standard, and the evaluation comes from the CFPS questionnaire question "What level of education do you think is required to be qualified for the job". In the selection of control variables, we refer to the previous literature on employment quality, and use individual characteristics such as age, gender, work experience, job characteristics such as whether or not to sign a labour contract, and regional characteristics as the control variables of the study. Table 1 reflects the meanings of the variables and the descriptive statistics, which show that 40.5% of people consider themselves to be overeducated.

Table 1. Variables and descriptive statistics

Variables	Mean	SD	Min	Max
Wage (lnwage)	8.252	0.701	3.332	10.87
Job satisfaction (satis)	3.619	0.889	1	5
Over-education (overedu)	0.405	0.491	0	1
Under-education (unedu)	0.080	0.272	0	1
Age	33.51	6.705	20	60
Gender	0.506	0.500	0	1
Working experience (exp)	7.027	4.679	0	30
Exp^2	0.714	1.012	0	9
Educational attainment (edu)	11.61	3.948	0	22
Labour contract (contract)	0.7449	0.4361	0	1
East	0.4804	0.4998	0	1
Central	0.2760	0.4772	0	1
West	0.2653	0.4867	0	1

4 Model estimation results and analyses

4.1 Education mismatch and wage earnings

Table 2 demonstrates the results of the regression analysis of employment matching and wage returns. When only education matching is added , the effect of overeducation on wage income is significantly negative at the 1% level. After gradually adding the control variables of individual characteristics, job characteristics and regional characteristics, the absolute value of the coefficient of over-education decreases slightly, but it still has a significant negative effect on the hourly wage of workers, and under-education has no significant effect on salary, reflecting that over-educated people do suffer from the wage penalty effect, and the regression result is consistent with the expected hypothesis. In terms of other influencing factors, gender, region and labour contract significantly affect the level of wage income.

Table 2. Wage income regression results

	(1)	(2)	(3)
Overedu	-0.188***	-0.208***	-0.166***
Unedu	-0.0398	-0.0605	-0.0376
Edu	0.128***	0.143***	0.124***
Gender		0.333***	0.319***
Exp		0.0834**	0.0743*
Exp^2		-0.315***	0.285***
Age		0.00591	0.00725*
Contract			0.311***
East			0.129**
Central			0.145***
Cons	6.341	5.419	5.373***
N	1047	1047	1047
R^2	0.125	0.159	0.205

Through regression analysis of wages and incomes, we find that education mismatch does have a significant impact on incomes, and that "high education and low employment" is no longer an uncommon phenomenon, which is not only a waste of talent but also a waste of investment in education. In the long run, the phenomenon of education mismatch will result in a mismatch of investment returns in education, thus lowering the quality of employment.

4.2 Education mismatch and job satisfaction

This paper uses an ordered probit model to regress job satisfaction. The regression results of the cross-section data in Table 3 show that when only academic qualifications are added, educational mismatch has a negative impact on job satisfaction. After adding the control variables of individual characteristics, unit characteristics and regional characteristics sequentially, the regression coefficients basically do not change much, and they are all significant at the 1% level. Besides that, experience and labour contract are also significant at 1% level.

Table 3. Job satisfaction regression results

	(1)	(2)	(3)
Overedu	-0.462***	-0.475***	-0.476***
Unedu	0.0773	0.0737	0.0724
Edu	-0.0116	-0.0115	-0.00505
Gender		-0.111	-0.116
Exp		-0.0262	-0.0248
Exp^2		0.0804***	0.0791**
Age		0.0113	0.0113
Contract			-0.162***
East			-0.138*
Central			-0.0578
N	1047	1047	1047
R^2	0.0189	0.0210	0.0222

The regression results indicate that the prevalence of "overeducation and undereducation" reflects job dissatisfaction and burnout. Failure to meet the job expectations of overeducated teachers is the biggest reason for the decrease in their satisfaction, and the comparison of job treatment with that of moderate educators reduces job satisfaction in another way.

4.3 Robustness test

The aforementioned wage income variable includes both main job income and general job income, so the regression results may have some bias, in order to ensure the robustness of the research results, we use the dependent variable replacement method: replacing wage income with total income from the main job. Job satisfaction in the Likert five-category option was treated as a dichotomous variable and regression analyses were conducted separately. The regression results all show that over-education has a significant negative effect on primary job income and that over-education significantly reduces workers' job satisfaction, consistent with the basic regression results.

5 Conclusion and policy recommendations

5.1 Guiding individuals to rationally choose educational inputs

When making educational decisions, individuals should make careful decisions, rationally grasp the balance between skills and qualifications, and not blindly pursue too high a level of education while neglecting the cultivation of their own skills. Therefore, the government should guide individuals to consider the comparison between the costs and benefits of education investment, make rational decisions on education expenditure, strive to maximize the benefits of education investment, and guide individuals to establish a correct concept of employment.

5.2 Promoting schools to cultivate high-quality talents

At present, there is a large span between the subject settings of some schools and the skills needed for employment, which is not conducive to graduates competing in the job market. On the one hand, the expansion of higher education institutions should consider the balance of labor supply and demand, which can be strengthened through school-enterprise cooperation and exchanges, and temporary contracts signed with enterprises; on the other hand, it is necessary to improve the quality of the workforce rather than just the quantity. Therefore, in order to improve the difficult transition from school to work, we can modernize the curriculum and teaching methods of the education system and reduce the occurrence of educational mismatches by improving the system of the school subject system, appropriately increasing the number of

application-oriented subjects and offering application-oriented courses, and so on. At the same time, it is necessary to strengthen the construction of the faculty, adjust the size and composition of the faculty at the right time, improve the professionalism and professional knowledge of students, and improve the personnel training system.

5.3 Encouraging enterprises to employ people scientifically

The phenomenon of supremacy of academic qualifications in the recruitment process of enterprises is one of the reasons that prompts individuals to excessively pursue education, so it is urgent to establish a scientific system of employing enterprises. The state should encourage enterprises to understand the level of job seekers in various aspects in the recruitment process, and should not only focus on the signal function of education, but also take the ability as an important direction of investigation and comprehensively evaluate the work ability of job seekers. Secondly, it is necessary to improve the treatment of high-quality talents, optimize the human resource management mode, and retain talents.

Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

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