

# The Impact of Social Insurance on Employment Quality

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**Abstract:** This paper empirically studies the impact of social insurance on employment quality based on China labor force dynamic survey in 2016. The results indicate that (1) social insurance significantly increases the annual salary of laborers and improves employment quality on the whole; (2) the impact of social insurance on the employment quality of laborers with different levels of education vary significantly, of which companies pass on their social insurance contributions to laborers with junior high school education and below, so social insurance remarkably reduces these people's annual salary and job satisfaction; (3) social insurance significantly enhances employment quality by greatly improving the health of laborers.

**Keywords:** Social insurance, Employment quality, Health status.

## 1. Introduction

Employment quality can be interpreted from macro and micro perspectives. Macro employment quality mainly refers to the overall work environment of a country or economy, which includes wage level, unemployment rate and labor relations. In this paper, employment quality is studied from a micro perspective focusing on individuals, which cover income, working hours, job stability and the matching between jobs and laborers. There is no unified standard for the structural dimensions of employment quality now. In practice, key dimensions are usually used as proxy indicators of employment quality. For this study, laborers' annual salary and job satisfaction are adopted as proxy indicators of employment quality to help examine the impact of social insurance on wages and job satisfaction.

Existing research on the impact of social insurance on workforce supply mainly covers two aspects, i.e., the impact of social insurance on labor participation and the impact of social insurance on labor wages. Some studies have found that the higher the level of social endowment insurance, the greater the probability of employees withdrawing from the labor market in advance. Costa (1995), Coile & Gruber (2007) and Vere (2011) conducted research on labor market in the US, and Börsch-Supan (1998) studied European labor market. They found that the higher the level of social endowment insurance, the greater the probability of individuals leaving the labor market earlier. There is no consensus on whether employers pass on part or all of their contributions to employees by reducing wages. Gruber & Krueger (1990) analyzed data about some industries with high labor costs in the US in the 1980s, and found 85% of payroll taxes were passed on to employees' wages. The study conducted by Hamaaki & Iwamoto (2010) on Japan also reveal that a part of enterprises' endowment insurance contributions was transferred to employees' wages.

Social insurance is a kind of employee benefit jointly paid by employers and employees. Chinese employers' contribution rate for social insurance is relatively high. There is no clear answer to the question if employers transfer their contributions to employees' wages. Empirical studies outside China have shown that employers do pass on their contributions to employees (Hamaaki and Iwamoto, 2010; Lai and Master, 2005). There are few relevant studies in China. Some scholars believe companies have limited ability to pass

on their payment, and some hold companies pass on part of their contributions to employees. Does social insurance affect the employment quality of laborers, and what is the mechanism of impact?

There are few studies on the effect of social insurance on employment quality in China. Most research focuses on the impact of social insurance on employees' income, while limited attention are paid to the impact of social insurance on job satisfaction. This paper studies the impact of social insurance on employment quality from the perspective of differences in human capital. It explores employers' transfer of their contributions to employees with different levels of education, and discusses the mechanism of social insurance affecting employment quality.

## 2. Data Source, Variables and Model

### 2.1. Data source

This study analyzes data from China Labor-force Dynamics Survey (CLDS) conducted by Center for Social Science Survey of Sun Yat-sen University in 2016, which is a large interdisciplinary tracking survey. The data includes the status quo and changes of China's labor force in terms of education, work, migration, health, social participation, economic activities and primary-level organizations. Research objectives are laborers aged 16-60 in sample households in 29 Chinese provinces. Samples with missing data and invalid samples have been excluded. Main variables in this study are defined as follows:

### 2.2. Variables

2.2.1 Dependent variables: the logarithm of annual salary and job satisfaction, which are proxy indicators of employment quality. Job satisfaction is calculated based on "overall satisfaction with work" in self-assessment part of the questionnaire for this study, in which 1=very dissatisfied, 2=not very satisfied, 3=satisfied, 4=relatively satisfied and 5=very satisfied. The larger the value, the more satisfied are participants with their job.

2.2.2 Core variable: pay social insurance contributions or not. To be specific, 1= pay social insurance contributions, 0=not pay social insurance contributions. Since endowment insurance and medical insurance are usually bundled, the author has excluded samples that pay medical insurance contributions but does not pay endowment insurance

contributions as well as those that pay endowment insurance contributions but does not pay medical insurance contributions.

2.2.3 Control variables. Since employment quality is also affected by other factors, control variables sex, age, type of household, level of education and marital status are included to avoid bias caused by them. The value of the variables are assigned as follows:

Sex: 1=male, 0=female

Type of household: 1=agricultural household, 0=non-agricultural household

Level of education: 1=junior high school education and below (never attended school + primary school/private school + junior high school), 0=the rest; 1=high school education (general high school + vocational high school + technical school + technical secondary school), 0=the rest; 1=college degree or above (junior college + bachelor's degree + master's degree + doctoral degree), 0=the rest

Marital status: 1=unmarried, 0=the rest; 1=married (first marriage + remarriage), 0= the rest; 1= divorced or widowed, 0=the rest

**Table 1.** Statistical description of variables

| Variable                              | Sample size | Mean      | Min   | Max    |
|---------------------------------------|-------------|-----------|-------|--------|
| Annual salary (logarithm)             | 4,634       | 9.952     | 3.689 | 14.509 |
| Job satisfaction                      | 8,931       | 3.506     | 1     | 5      |
| Social insurance                      | 8,931       | 0.110     | 0     | 1      |
| Sex                                   | 8,931       | 0.532     | 0     | 1      |
| Age                                   | 8,931       | 42.287    | 16    | 60     |
| Age squared                           | 8,931       | 1,906.176 | 256   | 3,600  |
| Type of household                     | 8,931       | 0.878     | 0     | 1      |
| Junior high school education or below | 8,931       | 0.775     | 0     | 1      |
| High school education                 | 8,931       | 0.139     | 0     | 1      |
| College degree or above               | 8,931       | 0.086     | 0     | 1      |
| Unmarried                             | 8,931       | 0.077     | 0     | 1      |
| Married                               | 8,931       | 0.895     | 0     | 1      |
| Separated or divorced                 | 8,931       | 0.028     | 0     | 1      |

### 2.3. Model

To explore the relationship between employment quality and social insurance, the following OLS benchmark regression equation is built:

$$Q_i = \beta_i I_i + \gamma_i X_i + \varepsilon_i \quad (1)$$

The equation deals with the impact of social insurance on employment quality. Explained variable  $Q_i$  represents the

logarithm of annual salary and job satisfaction, explanatory variable  $I_i$  refers to social insurance status ( $I_i=1$  means pay social insurance contributions, while  $I_i=0$  means not pay social insurance contributions),  $X_i$  indicates demographic characteristics that affect employment quality (that is, control variables such as sex, age, type of household),  $\gamma_i$  means regression coefficients of control variables, and  $\varepsilon_i$  represents random disturbance terms.

**Table 2.** The impact of social insurance on employment quality

| Variable                              | Annual salary (logarithm) | Annual salary (logarithm) | Job satisfaction    | Job satisfaction     |
|---------------------------------------|---------------------------|---------------------------|---------------------|----------------------|
| Social insurance                      | 0.734***<br>(0.037)       | 0.391***<br>(0.043)       | 0.140***<br>(0.027) | 0.072**<br>(0.034)   |
| Sex                                   |                           | 0.445***<br>(0.029)       |                     | 0.012<br>(0.017)     |
| Age                                   |                           | 0.087***<br>(0.011)       |                     | -0.025***<br>(0.006) |
| Age squared                           |                           | -0.001***<br>(0.000)      |                     | 0.003***<br>(0.000)  |
| Type of household                     |                           | -0.145***<br>(0.045)      |                     | -0.006<br>(0.033)    |
| Junior high school education or below |                           | -0.408***<br>(0.053)      |                     | -0.099**<br>(0.040)  |
| High school education                 |                           | -0.162***<br>(0.053)      |                     | -0.057<br>(0.041)    |
| Married                               |                           | 0.070<br>(0.058)          |                     | 0.041<br>(0.040)     |
| Separated or divorced                 |                           | -0.008<br>(0.103)         |                     | -0.026<br>(0.064)    |
| Sample size                           | 4,634                     | 4,634                     | 8,931               | 8,931                |

### 3. Empirical Results and Analysis

#### 3.1. The impact of social insurance on employment quality

Table 2 reports OLS empirical results for the impact of social insurance on employment quality. Regardless of whether other control variables are taken into consideration, payment of social insurance contributions can significantly increase the annual wage and job satisfaction of laborers. That is to say, social insurance contributions significantly improves laborers' employment quality.

As far as control variables are concerned, the annual salary of male laborers is significantly higher than that of female laborers. Annual salary relative to age is distributed in an "inverted U" shape, that is, laborers' annual salary first increases and then decreases with age. Job satisfaction relative to age is also in a "U" shape distribution. Compared with laborers with non-agricultural household, the annual salary of those with agricultural household is significantly lower. In terms of educational background, the employment quality of laborers who have received junior high school education or below and high school education is significantly lower than that of laborers who have received junior high school education or above. Further, regarding the degree of

influence, junior high school education or below has the greatest impact on employment quality, followed by high school education. This shows the higher the level of education, the higher the employment quality, so employees can raise employment quality by receiving higher education.

#### 3.2. The impact of social insurance on employment quality: from the perspective of differences in human capital

Social insurance is a kind of employee benefit jointly undertaken by the employer and the employee. There is no clear answer to whether employers pass on their contributions to employees' salary or not.

Table 3 discusses the heterogeneity of the impact of social insurance on employment quality among laborers with different human capital on the basis of OLS regression. Regardless of whether other control variables are included, payment of social insurance contributions significantly raises employment quality on average. However, payment of social insurance contributions greatly reduce the annual salary and job satisfaction of laborers with junior high school education or below and high school education. That is, employers pass on their social insurance contributions to employees with low level of education, thus significantly reducing the employment quality of such employees.

**Table 3.** The impact of social insurance on the quality of employment: from the perspective of differences in human capital

| Variable  | Annual salary (logarithm) | Annual salary (logarithm) | Job satisfaction    | Job satisfaction     |
|---|---------------------------|---------------------------|---------------------|----------------------|
| Social insurance  | 0.914***<br>(0.051)       | 0.619***<br>(0.058)       | 0.197***<br>(0.039) | 0.129***<br>(0.046)  |
| Social insurance* Junior high school education or below | -0.426***<br>(0.079)      | -0.252***<br>(0.078)      | -0.136**<br>(0.062) | -0.067<br>(0.064)    |
| Social insurance* High school education                 | -0.240***<br>(0.081)      | -0.170**<br>(0.077)       | -0.076<br>(0.063)   | -0.034<br>(0.064)    |
| Sex   |                           | 0.452***<br>(0.029)       |                     | 0.014<br>(0.017)     |
| Age   |                           | 0.076***<br>(0.011)       |                     | -0.028***<br>(0.006) |
| Age squared   |                           | -0.001***<br>(0)          |                     | 0.04***<br>(0)       |
| Type of household                                       |                           | -0.246***<br>(0.043)      |                     | -0.030<br>(0.032)    |
| Married   |                           | 0.051<br>(0.058)          |                     | 0.033<br>(0.040)     |
| Separated or divorced                                   |                           | -0.023<br>(0.103)         |                     | -0.033<br>(0.064)    |
| Sample size   | 4634                      | 4634                      | 8931                | 8931                 |

#### 3.3. Endogeneity discussion

Omitted variables and measurement errors are likely to cause endogeneity problems in whether or not pay social insurance contributions. It is found that employees who pay social insurance contributions usually have higher wages and job satisfaction, but it cannot be concluded that social insurance improves employment quality. This is because there are many observable and unobservable differences between those that pay and do not contribute to social insurance. Individuals paying social insurance contributions usually have more advantages in the labor market. To clarify this issue,

the most ideal method is to compare differences in the employment quality of the same laborer when paying and not paying social insurance contributions, but only one situation can be observed in a laborer. Therefore, a "counterfactual" framework can be constructed through propensity score matching, so that differences in the employment quality of the same laborer when paying and not paying social insurance contributions can be compared under the premise of possible endogeneity is overcome to verify whether social insurance exerts consistent and stable impact on employment quality.

The premise of using propensity score matching is that samples pass balance test. The goal of balance test is to ensure

that after matching, two groups of samples do not have systematic differences in other variables except for key explanatory variables. Table 5 presents the impact of social insurance on laborers' annual salary and job satisfaction under three matching methods. The results of average treatment effect on the treated (ATT) show that after eliminating

observable systematic differences between samples, social insurance still has a significant positive effect on annual salary and job satisfaction. This is consistent with previous empirical result and further verifies the robustness of the result.

**Table 5.** Results of propensity score matching

|                           | Kernel matching   | Nearest neighbor matching | Radius matching    |
|---------------------------|-------------------|---------------------------|--------------------|
| Annual salary (logarithm) | 0.321***<br>(5.6) | 0.304***<br>(5.22)        | 0.308***<br>(6.03) |
| Job satisfaction          | 0.070*<br>(1.69)  | 0.078*<br>(1.77)          | 0.078**<br>(2.09)  |

#### 4. Path Analysis of the Effect of Social Insurance on Employment Quality

OLS regression is conducted to further explore the possible

impact of social insurance on employment quality. Social insurance as a kind of basic welfare for employees that mainly plays the role of guaranteeing employees' basic life. Basic medical insurance is expected to improve the health of urban workers, thus improving their employment quality.

**Table 4.** Path analysis of the impact of social insurance on employment quality

| Variable                              | Annual salary (logarithm) | Annual salary (logarithm) | Job satisfaction     | Job satisfaction     |
|---------------------------------------|---------------------------|---------------------------|----------------------|----------------------|
| Social insurance                      | 0.391***<br>(0.043)       | 0.387***<br>(0.043)       | 0.072**<br>(0.034)   | 0.065*<br>(0.034)    |
| Self-assessed health                  |                           | 0.129***<br>(0.016)       |                      | 0.125***<br>(0.009)  |
| Sex                                   | 0.445***<br>(0.029)       | 0.430***<br>(0.028)       | 0.012<br>(0.017)     | -0.011<br>(0.017)    |
| Age                                   | 0.087***<br>(0.011)       | 0.091***<br>(0.011)       | -0.025***<br>(0.006) | -0.022***<br>(0.006) |
| Age squared                           | -0.001***<br>(0)          | -0.001***<br>(0)          | 0***<br>(0)          | 0***<br>(0)          |
| Type of household                     | -0.145***<br>(0.045)      | -0.136***<br>(0.044)      | -0.006<br>(0.033)    | 0.007<br>(0.033)     |
| Junior high school education or below | -0.408***<br>(0.053)      | -0.403***<br>(0.053)      | -0.099**<br>(0.040)  | -0.086**<br>(0.040)  |
| High school education                 | -0.162***<br>(0.053)      | -0.164***<br>(0.053)      | -0.057<br>(0.041)    | -0.057<br>(0.040)    |
| Married                               | 0.070<br>(0.058)          | 0.054<br>(0.058)          | 0.041<br>(0.040)     | 0.018<br>(0.039)     |
| Separated or divorced                 | -0.008<br>(0.103)         | -0.013<br>(0.102)         | -0.026<br>(0.064)    | -0.034<br>(0.064)    |
| Sample size                           | 4,634                     | 4,634                     | 8,931                | 8,931                |

Health status is a possible path through which social insurance affects employment quality. The larger the value of self-assessed health, the better the health status of participants. Columns (2) and (3) are estimated results with annual salary as the dependent variable. After self-assessed health is included, the influence coefficient of social insurance on annual salary decreases, which indicates that health status is a possible path for social insurance to affect annual salary. Columns (4) and (5) are estimated results with job satisfaction as the dependent variable. After self-assessed health is taken into consideration, the influence coefficient of social insurance on job satisfaction declines, which indicates health status is a possible path through which social insurance affects job satisfaction. That is to say, social insurance improves laborers' employment quality by affecting their health status.

#### 5. Conclusions and Policy Recommendations

This paper discusses the impact of social insurance on employment quality based on China labor force dynamic survey in 2016, with annual salary and job satisfaction as proxy indicators of employment quality. It also explores whether employers pass on their social insurance contributions to employees with different levels of education and possible paths through which social insurance affects employment quality. Findings of this study are:

First, paying social insurance contributions raises employment quality on the whole. Social insurance is a kind of benefit for employees. Paying social insurance contributions is beneficial for an increase in workers' annual salary and job satisfaction.

Second, for workers with junior high school education or below and high school education, paying social insurance contributions significantly reduces their annual salary and job satisfaction. That is, employers transfer their social insurance contributions to workers with lower level of education, and paying social insurance contributions significantly reduces their employment quality.

Third, social insurance greatly improves workers' employment quality by significantly improving their health status. In order to improve the employment quality of laborers, more attention should be paid to improving their health, which helps raise their annual salary and job satisfaction.

Based on above analysis, this paper obtains the following inspirations: (1) It is necessary to increase the coverage rate of migrant workers' medical insurance and endowment insurance through mandatory means such as legislation, improve employee security system and increase the insurance participation rate of laborers, thereby improving their employment quality on the whole. (2) Measures should be taken to enhance laborers' awareness of rights protection and strengthen effective corporate social responsibility education on employers. To this end, authorities should organize workers to study policies and regulations on the one hand, and strengthen supervision over employers on the other hand. (3) Laborers should consciously enhance exercise and get check-ups at the doctor on a regular basis to maintain good health, and continue to improve utilization of health services. Maintaining a good health is an important way to improve their employment quality.

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