Medical insurance participation and the ageing population subjective well-being: an empirical analysis based on CGSS 2015 data

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Abstract. Using the Chinese General Social Survey (CGSS 2015) data, the current research is to examine the relationship between medical insurance and subjective well-being for elderly people in China. To test our hypothesis, we first generated and tested an ordered probit model, as the dependent variable in our research is subjective well-being, additionally, as in China we have different medical insurance types, we integrated them and classified them as social basic medical insurance, and commercial medical insurance. Also, as the causal identification problem and endogenous problem exist, we introduced another main dependent variable as the individual’s social security satisfaction in our research. The implications derived from this study are summarized as conclusions.

1. Introduction

The sixth census shows that the elderly population has reached 178 million, accelerating the aging trend in China. The change of the age structure of China's population shows that while people's living standards and medical and health care undertakings have been greatly improved, the aging process is also gradually accelerated. In particular, the problems of low fertility and aging may be more prominent in the developed coastal areas with more people and less land. In this context, the deepening of aging will not only directly affect economic growth, but also have a great impact on China's social security system. The scale of the rapidly growing elderly population increases the payment demand of basic pension expenses; Besides, with various reasons such as the difficulty in collecting and expanding the coverage of the basic pension fund, the situation that the basic pension fund in China cannot cover the expenditure will be more and more serious. Therefore, it is necessary to explore the interaction of medical insurance participation and the old's subjective well-being.

Early research in Easterlin (1995) introduced happiness to economics and discovered the "happiness-income" paradox. After that, the term subjective well-being become increasingly more popularity. Subjective happiness refers to self-described happiness or life satisfaction (Clark, Diener, Georgellis & Lucas, 2010). Although the subjective measure of happiness is relatively simple, studies have shown that this index has high validity and reliability in terms of adequacy, validity and comparability, and accurately expresses personal feelings (Veenhoven, 1991; Easterlin, 2003; Graham, Eggers & Sukhtankar, 2007). Therefore, a thorough social insurance system can help low-income groups to obtain relatively higher compensation and achieve positive adjustment of the income gap, so as to improve national happiness (Wang, Long, Jiang & Xu, 2016).
2. Methods
We generated and integrated the CGSS survey data for our study, and the dependent variable is subjective well-being, and the Likert quintiles are used to measure the explained variable subjective well-being, so that the mean equation for the study we applied is the Ordered Probit Model. Additionally, the independent variable is the medical insurance participation, in specific, we classified as social medical insurance, and commercial insurance. Apart from this, we also take other control factors into consideration, which involve age, district, area family income and individual’s income, physical health situation and mental health. All the related variables descriptive statistics can be seen at Table 1.

| Variables | mean | sd   | min | max |
|-----------|------|------|-----|-----|
| happ      | 3.92 | 0.84 | 1   | 5   |
| socmed    | 0.93 | 0.25 | 0   | 1   |
| commed    | 0.04 | 0.20 | 0   | 1   |
| medical   | 0.94 | 0.25 | 0   | 1   |
| age       | 69.54| 7.53 | 60  | 94  |
| age_2     | 48.93| 10.92| 36  | 88.36|
| gender    | 0.48 | 0.50 | 0   | 1   |
| district  | 2.86 | 1.04 | 1   | 4   |
| area      | 0.45 | 0.50 | 0   | 1   |
| faincome  | 60916.57| 380000.00| 0 | 1.00E+07|
| party     | 0.15 | 0.36 | 0   | 1   |
| sats      | 4.33 | 0.80 | 1   | 5   |
| selfhea   | 3.15 | 1.07 | 1   | 5   |
| dep       | 3.73 | 0.93 | 1   | 5   |

3. Empirical results
After controlling the influence of age, age-squared, gender, income (involve both family income and individual’s income respectively), political status (whether participate the Party), and health status (take both mental and physical health into account), and the robustness of regression results can be tested by nested model in later. The robust standard error considering heteroscedasticity is adopted. The basic regression results are shown in Table 2.

Obviously, model 1&2 are about the social medical insurance participation situation, model 3&4 are about the only commercial medical insurance participation situation, whereas model 5&6 are about if participate the social medical insurance or commercial medical insurance. As the main insight in the existing literature states that subjective well-being is quite related to one’s income level, we segment the income as family income and individual income. Besides, considering the ageing population is quite different and unique group, as if get old, the source of income may achieved from social pension deposit, the allowance gift from children, and one’s own pension. Within the existing literature, some scholars think that in China, the ageing problem situation distributes imbalanced, and especially in east part district of China, the ageing problem seems more serious, so we at first do not considerate the district factor in main regression as Table 2, we put the district segments factor as robust check in later. Also, in order to reduce the endogenous problems of insurance and happiness, we also introduced the variable of satisfaction with public services as sats.
As can be seen, the social medical insurance is positive related with subjective well-being, which means that if old population take participate in social medical insurance, then more happiness can feel. However, if the old people only have commercial medical insurance, then it is not helpful to achieve happiness. Also, considering the whole population overall coverage, then the result gets significant positive as well. Now we turn to other control variable, the result show that for the old, only family overall income level is semantically positive with subjective well-being gaining, that means for the old in China, the old’s income comes from different sources, and the situation vary a lot.
As our study is about the aging problem with the medical insurance participation, the following Table 3 is the extra test for the above empirical analysis, and in Table 3, we segment the age level from 1-7 to correspond to the age from 60-64, 65-69, 70-74, 75-79, 80-84, 85-89, 90-94 respectively. And what interesting things we find in Table 3 is, for the most the old group, 90-94, although people’s happiness is still significantly positive impact by participant in social medical insurance, the age factor is not important. But, for other age groups, as people get older, they seem to experience more happiness, which may be due to family relationships. Also, as we mentioned that some literature state that aging problem varies a lot in different district, we classified as northeast district, west district, middle district, as well as southeast district, but the findings show actually the regional differences are not pronounced.

| Table 3. Robust Check for different age group and different districts |
|---------------------------------------------------------------|
|                  | (1)    | (2)    | (3)    | (4)    | (5)    | (6)    |
|-------------------|--------|--------|--------|--------|--------|--------|
| happ socmed       | 0.226**| 0.228* | 0.251**|
|                   | (0.077)| (0.091)| (0.091)|
| medical           |        |        |        | 0.213**| 0.217* | 0.240* |
|                   |        |        |        | (0.079)| (0.094)| (0.094)|
| 2.agelevel        | 0.160**| 0.173**| 0.169**| 0.159**| 0.172**| 0.168**|
|                   | (0.052)| (0.058)| (0.058)| (0.052)| (0.058)| (0.058)|
| 3.agelevel        | 0.154**| 0.178**| 0.172**| 0.153**| 0.178**| 0.172**|
|                   | (0.058)| (0.066)| (0.058)| (0.058)| (0.066)| (0.066)|
| 4.agelevel        | 0.168**| 0.203**| 0.198**| 0.169* | 0.204**| 0.199**|
|                   | (0.066)| (0.076)| (0.076)| (0.076)| (0.076)| (0.076)|
| 5.agelevel        | 0.181* | 0.155  | 0.139  | 0.181* | 0.154  | 0.139  |
|                   | (0.077)| (0.089)| (0.089)| (0.077)| (0.089)| (0.089)|
| 6.agelevel        | 0.305**| 0.328* | 0.328* | 0.306**| 0.329* | 0.329* |
|                   | (0.111)| (0.134)| (0.134)| (0.111)| (0.134)| (0.134)|
| 7.agelevel        | 0.386  | 0.463  | 0.436  | 0.387  | 0.464  | 0.438  |
|                   | (0.217)| (0.246)| (0.247)| (0.217)| (0.246)| (0.247)|
| gender            | -0.181***| -0.195***| -0.179***| -0.181***| -0.195***| -0.180***|
|                   | (0.041)| (0.047)| (0.047)| (0.041)| (0.047)| (0.047)|
| district          | -0.008 | -0.010 | -0.009 | -0.010 |        |        |
|                   | (0.020)| (0.022)| (0.020)| (0.022)|        |        |
| area              | 0.081  | 0.170***| 0.196***| 0.082  | 0.171** | 0.197***|
|                   | (0.044)| (0.058)| (0.058)| (0.044)| (0.058)| (0.058)|
| edu               | 0.035  | 0.014  | 0.005  | 0.036  | 0.015  | 0.005  |
|                   | (0.020)| (0.024)| (0.024)| (0.020)| (0.024)| (0.024)|
| party             | 0.214***| 0.187**| 0.186**| 0.215***| 0.188**| 0.187**|
|                   | (0.061)| (0.065)| (0.065)| (0.061)| (0.065)| (0.065)|
| sats              | 0.240***| 0.215***| 0.224***| 0.240***| 0.215***| 0.224***|
|                   | (0.024)| (0.029)| (0.029)| (0.024)| (0.029)| (0.029)|
|       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|
|       | 0.174*** | 0.181*** | 0.180*** | 0.175*** | 0.181*** | 0.180*** |
|       | (0.021)   | (0.024)   | (0.024)   | (0.021)   | (0.024)   | (0.024)   |
| dep   | 0.353***   | 0.341***   | 0.335***   | 0.353***   | 0.341***   | 0.334***   |
|       | (0.024)   | (0.028)   | (0.028)   | (0.024)   | (0.028)   | (0.028)   |
| ln_income | 0.005   | -0.003   | 0.005   | -0.003   |
|       | (0.025)   | (0.026)   | (0.025)   | (0.026)   |
| ln_faincome | 0.094*** | 0.100*** | 0.095*** | 0.100*** |
|       | (0.024)   | (0.024)   | (0.024)   | (0.024)   |
| 2.district | -0.291*** | -0.290*** |
|       | (0.079)   | (0.079)   |
| 3.district | -0.179* | -0.178* |
|       | (0.077)   | (0.077)   |
| 4.district | -0.139 | -0.139 |
|       | (0.074)   | (0.074)   |
| N     | 3397   | 2641   | 2641   | 3397   | 2641   | 2641   |
| PseudoR2 | 0.090   | 0.092   | 0.095   | 0.089   | 0.092   | 0.094   |

4. Conclusion
First, for the old, comparing the only participate in commercial medical insurance, social medical insurance is more helpful to gain happiness. Our research suggests that if the old have the chance to participate social medical insurance, then it is better not to miss it. Second, one’s insurance participation situation, is positive related to family income rather depend on him income. Besides, in the robust check result, it is easy to find the district factor is not really significant in terms of happiness and ageing situation. Also, expect the eldest age group, other ageing people’s subjective well-being increase with age increase. In addition, as we can find almost in all models, only participating commercial medical insurance, it is not significant positive to increase happiness, the probable cause of this result may too few people are covered only by commercial medical insurance, and the commercial insurance may charge high fees and pay unreasonable claims, which shows that the space for the next security reform can start from the development of commercial insurance.

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