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Effect of Health Insurance Schemes on Income of Agricultural Migrants

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ABSTRACT
The goal of this paper is to shed light on whether and how different health insurance schemes affect the agricultural migrants' income and income distribution. A dataset of 89506 individuals is obtained from China Migrants Dynamic Survey (2017). The study uses OLS regression and quantile regression to analyzes the average effect and the heterogeneous effects on income redistribution. The results show that Urban Employees Basic Medical Insurance (UEBMI) and Urban Residents Basic Medical Insurance (URBMI) have significantly increased income of agricultural migrants, while New Cooperative Medical Scheme (NCMS) and Basic Medical Insurance for Urban and Rural Residents (BMIURR) do not. The income-increasing effect of UEBMI is greater than that of URBMI. And the income-increasing effect of UEBMI reflects the "pro-poor effect". While the phenomenon of "target shifting" is found in the effect of URBMI.
Keywords: *Health insurance, income effect, agricultural migrants*

1. INTRODUCTION

One of the fundamental stated goals of public health insurance is to reduce the impact of health shocks on individual income and to reduce poverty due to illness for overall population. After more than 20 years of efforts, China has established Basic Medical Insurance for Urban Employees (UEBMI), New Cooperative Medical Scheme (NCMS), and Urban Residents Basic Medical Insurance (URBMI). In 2016, the State Council decided to integrate the NCMS and URBMI into Basic Medical Insurance for Urban and Rural Residents (BMIURR), thus forming a multi-level public health insurance system covering the whole population. However, China's public health insurance system still face quite some challenges with one of them being inequity among the four health insurance schemes [1]. In order to further promote the reform of the public health insurance schemes, analyzing and comparing the average income effect and income redistribution effect of these schemes is of great importance to policymakers.

1.1. Literature Review

Research shows that health insurance schemes can effectively solve the problems of poverty caused by illness and return to poverty because of illness for low-income people [2-3]. The poverty-reduction effect of health insurance schemes is mainly through lowering the economic threshold for medical treatment, increasing the application of outpatient and inpatient services to improve health status, and reducing personal medical expenses or the burden of family care [4-5]. The improvement of health status can make up for the lost labor time due to disease, and obtain more income by increasing labor supply and labor efficiency. Besides, better health status can also help to release more preventive reserves and promote investment in human capital and physical capital, so that individuals can obtain more income [6-7]. However, the very few studies are all on the single health insurance effect and have mixed conclusions. Hamid et al revealed that the participation of micro health insurance did not significantly influence household per capita income [8]. Huang found that participation in URBMI significantly increased the household per capita income growth by 13.78% [9]. Qi demonstrated that NCMS significantly raised per capita incomes by 4% on average, but did not influence income distribution within a province [10].

These studies focus on the average income effect of health insurance, but don't analyze the income distribution effect of health insurance for subgroups. Meanwhile, to our knowledge, very few researchers have paid attention on the heterogeneous effect of different health insurance schemes on the related outcomes, especially income. Moreover, agricultural migrants in China have heterogeneous accesses to the four public health insurance schemes and are characterized with semi-citizenization, non-territoriality, and high-mobility. The health insurance effect on income among this special group, agricultural migrants in China, must be very interesting and policy relevant. However, such study is very scarce.

1.2. Our Contribution

This paper fills this gap by using a nationwide survey among Chinese agricultural migrants. We explores the heterogeneous effects of health insurance schemes on

income and income distribution among agricultural migrants in China, and based on the conclusion of research, relevant suggestions are put forward for improving the public health insurance schemes.

1.3. Paper Structure

The rest of the paper is organized as follows. Section 2 introduces design of the research, including the source of data, variable selection and the measuring method. Section 3 shows the result of data analysis on the average income effect and income redistribution effect of the four types of health insurance schemes on agricultural migrants. Section 4 summarizes the research conclusions and puts forward some relevant suggestions based on the result of the research.

2. RESEARCH DESIGN

2.1. Dataset

We used the data from the 2017 wave of China Migrants Dynamic Survey implemented by the National Health Commission. Agricultural migrants in this study are defined as the people whose household registration is in the rural areas, but living in the urban areas for more than one month. In order to measure the income effect of a single type of public health insurance scheme effectively, we ruled out those who had more than one public health insurances and included 89506 individuals in the final sample. The age-bracket of the samples is 18-61 years old, with an average age of 36.09 years old. Most of them are male and married. 89.14% of agricultural migrants are educated in senior school or below. More than half of agricultural migrants are employees. 37.80% of agricultural migrants are self-employed. Only 5.37% of agricultural migrants are employers. In terms of the migration range, the number of people moving within the province and across provinces is basically the same.

2.2. Explained and Explanatory Variables

The dependent variable is defined as an agricultural migrant's monthly net income in this paper. And it is expressed in natural logarithmic transformation.

The key independent variables are expressed in four dummy variables to indicate whether agricultural migrants participated in NCMS, URBMI, UEBMI or BMIURR. The other explanatory variables, i.e. control variables, are classified into three categories: individual characteristics, migration characteristics, and health characteristics. Based on previous studies, age, gender, education, marital status, and employment status are included as individual characteristics factors in this study. The migration range variable is referred to as whether the individual migrated within the province or out of the province where he/she originally resided. And the health characteristics variable is defined as self-reported health status.

2.3. Methods of Data Analysis

Firstly, this paper uses a basic ordinary least squares (OLS) multiple regression model to assess whether health insurance can improve the individual's income level. We further use the quantile regression method to capture the heterogeneous effects of health insurance schemes on income distribution. Quantile regression is preferable to other techniques in this study for two reasons. First, quantile regression mostly prefers for the income distribution, as it allows to make an estimation for specific quantiles of conditional income distribution and to describe the distribution characteristics more comprehensively. Second, quantile regression yields more robust coefficient estimates than the OLS estimates when data have both outliers and heavy-tailed distributions. Comparisons of the regression coefficients across different percentiles allow us to infer the effects of a certain health insurance scheme at different points in the income distribution.

3. RESULTS

3.1. Status of Participation in Health Insurance

The health insurance coverage rate of agricultural migrants is 94.26%, and most of them participated in NCMS, accounting for 74.99%. Although agricultural migrants work and live in the city, the number of them participating in urban health insurance is still small. 13.44% of agricultural migrants participate in UEBMI, and 2.65% of them participate in URBMI. In China, the process of promoting the integration of urban and rural residents' health insurance is still slow. Only 3.18% of agricultural migrants participate in BMIURR.

3.2. Income Effect Analysis

Table 1 presents the OLS regression and quantile regression results. Based on the control of individual characteristics, migration characteristics and health characteristics, the results of OLS regression show that URBMI and UEBMI have positive effects on the monthly net income of agricultural migrants (p<0.01). Moreover, the influence of UEBMI on income is higher than that of URBMI. NCMS and BMIURR have no significant impact on monthly net income.

The results of quantile regression show that the UEBMI has played a more important role in increasing the income of different groups. The quantile estimates demonstrated

that participating in UEBMI significantly increased the logarithm of monthly net income by 16.72%, 13.76%, 10.52%, 9.74% and 11.58% at the 0.10, 0.25, 0.50, 0.75, and 0.90 quantile, respectively, compared with those who did not participate. It can be seen that the income-increasing effect of UEBMI is most obvious among low-income group, which reflects a kind of "pro-poor" effect. Compared with the fixed-amount payment model of the other three types of health insurance schemes, UEBMI adopts a proportional payment model. The financing mode is progressive and can transfer part of the income of high-income group to the low-income group.

The effect of URBMI on the income increase of the lowest income group is more significant, but the effect of low- and middle-income groups is not as obvious as that of the high-income group. “Target shifting” phenomenon is found in a certain extent, which may promote the flow of medical resources to high-income groups. The possible explanation for this phenomenon is that the enrollment of an urban health insurance, URBMI, strengthens their confidence to fight against disease, so they put more money into other investments, such as training, and thus increase their income level. Moreover, when a disease occurs, the poor are more likely to choose a lower-level medical institution for treatment because of the higher reimbursement rate, which will reduce their medical expenses. However, for low- and middle-income groups, it is possible to choose medical institutions with a lower reimbursement rate but higher ranks for treatment, so the effect of reducing medical expenditure is not very obvious. Still, further analysis is needed to thoroughly explain the phenomenon.

Table 1 The results of OLS and quantile regressions

	OLS	QR_10	QR_25	QR_50	QR_75	QR_90
NCMS	-0.0126	0.0053	0.0040	-0.0071	-0.0099	-0.0106
	(0.0077)	(0.0147)	(0.0092)	(0.0087)	(0.0096)	(0.0142)
URBMI	0.0443***	0.0474*	0.0348**	0.0358**	0.0531***	0.0776***
	(0.0131)	(0.0251)	(0.0158)	(0.0149)	(0.0164)	(0.0242)
UEBMI	0.1328***	0.1672***	0.1376***	0.1052***	0.0974***	0.1158***
	(0.0091)	(0.0173)	(0.0109)	(0.0103)	(0.0113)	(0.0167)
BMIURR	-0.0136	-0.0004	0.0027	-0.0174	-0.0080	-0.0145
	(0.0124)	(0.0237)	(0.0149)	(0.0140)	(0.0154)	(0.0228)
Age	-0.0064***	-0.0069***	-0.0061***	-0.0061***	-0.0050***	-0.0044***
	(0.0002)	(0.0004)	(0.0003)	(0.0002)	(0.0003)	(0.0004)
Gender（base group: female）	0.2776***	0.2749***	0.2901***	0.2901***	0.2872***	0.3172***
	(0.0036)	(0.0069)	(0.0044)	(0.0041)	(0.0045)	(0.0067)
Education background(base group: primary school and below) Middle school	0.1032***	0.1841***	0.1082***	0.0793***	0.0661***	0.0906***
	(0.0051)	(0.0097)	(0.0061)	(0.0057)	(0.0063)	(0.0094)
Senior school and technical secondary school	0.1710***	0.2375***	0.1552**	0.1301***	0.1293***	0.1623***
	(0.0061)	(0.0117)	(0.0074)	(0.0070)	(0.0077)	(0.0113)
Junior college and above	0.2842***	0.3284***	0.2525***	0.2332***	0.2724***	0.3320***
	(0.0077)	(0.0147)	(0.0093)	(0.0087)	(0.0096)	(0.0142)
Marital status（base group: unmarried）	0.1731***	0.1754***	0.1443***	0.1542***	0.1682***	0.1809***
	(0.0051)	(0.0098)	(0.0061)	(0.0058)	(0.0064)	(0.0094)
Employment status（base group: employee） Employer	0.5106***	0.1939***	0.3261***	0.4613***	0.7062***	0.9251***
	(0.0081)	(0.0154)	(0.0097)	(0.0091)	(0.0101)	(0.0149)
Self-employed	0.0752***	-0.1724***	-0.0466***	0.0735***	0.1900***	0.3185***
	(0.0040)	(0.0076)	(0.0048)	(0.0045)	(0.0495)	(0.0073)
Others	-0.1151***	-0.2958***	-0.1802***	-0.1090***	-0.0414**	0.0663***
	(0.0138)	(0.0264)	(0.0166)	(0.0156)	(0.0172)	(0.0255)
Migration Range（base group: inter-provincial migration）	-0.1419***	-0.1448***	-0.1384***	-0.1411***	-0.1451***	-0.1623***
	(0.0036)	(0.0068)	(0.0043)	(0.0040)	(0.0044)	(0.0066)
Self-rated health status（base group: poor）	0.2689***	0.5114***	0.3211***	0.2502***	0.2134**	0.1590***
	(0.0153)	(0.0293)	(0.0184)	(0.0174)	(0.0191)	(0.0283)
Constant	7.7014***	6.8982***	7.3990***	7.7548***	8.0006***	8.2352***
	(0.0194)	(0.0371)	(0.0233)	(0.0220)	(0.0242)	(0.0358)
Adj R-squared	0.168					

Note: Standard errors in parentheses; * $p<0.1$, ** $p<0.05$, *** $p<0.01$

NCMS is more designed to provide financial protection for hospitalization costs and catastrophic disease. The coverage of outpatient care of NCMS is very limited with very low reimbursement. In addition, NCMS has many restrictions on designated hospitals and rather complex reimbursement procedure. It is very inconvenient for agricultural migrants, who already work and live in urban areas, to get NCMS reimbursement. Such reimbursement inconvenience may reduce the actual service use rate among agricultural migrants covered by NCMS.

After the integration of two health insurance schemes, although the BMIURR has improved in terms of reimbursement and financial subsidies compared with NCMS, the compensation is still limited. Moreover, BMIURR has not effectively improved the fairness of the use of urban and rural medical services, and it is not conducive to the use of medical services by agricultural migrants in the cities. So BMIURR has little income effect.

4. CONCLUSIONS

The results show that URBMI and UEBMI can significantly increase the income of agricultural migrants, while NCMS and BMIURR have no significant income effect. The income-increasing effect of UEBMI is most obvious in the low-income group which reflects the "pro-poor effect". While the accuracy of URBMI in income redistribution is not as good as that of UEBMI, and to some extent, the phenomenon of "target shifting" is found. Due to the limitation of data, which haven't information on medical spending and education and training expenditure, we are unable to discuss the internal mechanism of health insurance on income.Future research can continue to explore the impacts when better data are available.

This paper suggests that China's health insurance system should be reformed from the following aspects. Firstly, the government should provide more policy incentives to encourage enterprise to enroll more agricultural migrants into UEBMI and thus improving the income inequality of agricultural migrants. Secondly, URBMI, NCMS and BMIURR all adopt fixed payment mode, which will lead to relatively heavy payment burden of low-income group, and the financing is regressive, which reduces the actual number of beneficiaries of the policy and affects the income redistribution effect. Therefore, it should be considered to establish a dynamic adjustment mechanism related to individual payment base and income, so as to keep the growth of individual payment consistent with the differences among different income groups. Thirdly, considering that the NCMS has not played a substantial role in increasing income, coupled with its low utilization rate and complicated procedures for reimbursement in different places, on the one hand, it is necessary to improve the portability of NCMS to meet the needs of agricultural migrants. On the other hand, NCMS really needs to enlarge its benefit package, reduce the co-payment proportion of individual in medical fund reimbursement and thus can better benefit agricultural migrants' health and life.

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