Assessing the Impact of New Rural Cooperation Medical System （NCMS） on China's Rural Labor Market: An Empirical Study Using Propensity Score Matching Method*

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Abstract: New Rural Cooperation Medical System (NCMS) is by far the most generous and popular rural social security system implemented in China. Is it capable of improving the labors' income and expanding workforce? If so, what are the mechanisms operating behind? Understanding these issues is of great importance to reconstruct China's new demographic dividend. This paper finds that participation in NCMS improves labor income by 6%, and this effect is more significant among migration population, which is about 10%. Meanwhile, NCMS reduces the participants' work time by 10% and raises hourly wage by 20%, respectively. It shows that the NCMS is helpful to improve the labor productivity and allocation efficiency through releasing the rural labor force. Thus, it further promotes the growth of labor income in NCMS participants.

Key Words: NCMS; Labor Market Effect; PSM

JEL codes: E62，I18，J68

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I. Introduction

As an important part for constructing China's rural security system, the new rural cooperation medical system (hereinafter referred to as "NCMS") implemented since 2003 has highly attracted the attention of the academic circles and the practical departments all the time since the promotion of the pilot project. Till 2013, 802 million people have joined NCMS, the participation rate has reached 99%, the actual per capita raised capital has reached RMB 370 and 1.94 billion people in total have been benefited. Therefore, as an important social insurance project, the economic impact thereof on the insured people and the degree of such impact on changing rural residents' microscopic behaviors are always the key issues in theoretical research.

Viewed from the research literatures, the domestic scholars' achievements are mainly concentrated on the impact of NCMS on rural residents' medical expense (e.g. Cheng Lingguo, Zhang Ye, 2012), saving and consumption (e.g. Zhou Xiaoyan, Wang Dehua, Li Junpeng, 2011; Bai Chong'en, Li Hongbin, Wu Binzhen, 2012) and hospitalizing location (e.g. Qin Xuezheng, Zheng Zhi, 2011; Ning Manxiu, Liu Jin, 2014). However, it is worth noting that the rural residents are not only the passively insured social residents, but also the decision-making subject actively participating in the labor market. Moreover, relatively to the endowment insurance, "this security system is more meaningful for the labor force in prime age" (Gruber, 2000), because the medical insurance is an income security provided to people during the whole working period. Along with the increasingly intensified conflicts of the population structure aging in China, NCMS implementation effect is not only directly related to the change of the rural residents' medical burden and hospitalizing location, but also determines whether NCMS can improve human capital level and accordingly generate promotion effect to the rural labor market.

Although the impact of NCMS on the insured people's labor income is not directly discussed in above literatures, the detailed investigation on the rural security improvement and the impact on consumption expenditures as well as the hospitalizing locations still indicates the impact on the labor market behind the phenomenon, thus providing important enlightenment for us to further discuss the income system of NCMS. Generally speaking, till now, fewer literatures have investigated the impact of NCMS implementation on human capital and labor market in the aspect of labor economics and meanwhile the corresponding empirical study is also lacked.

According to the classical theory, the health level and the medical insurance undoubtedly significantly influence individual's performance (including wage level, working hour, employment situation, etc.) in the labor market. (Bowen and Finegan, 1969; Chirikos, 1993; Gruber, 2000) Due to various endogenous challenges of the problem itself and such limitations as

research data availability, the existing literatures fail to systematically verify such contributions as labor income improvement and labor supply stimulation hidden in Chinese NCMS project. More importantly, as the main research subject in international labor economics field, the impact of the medical insurance on labor market is lack of quantitative analysis in China. Therefore, the empirical study on this subject undoubtedly deeply influences our recognition on the function and positioning of NCMS.

On the basis of the policy characteristics of NCMS project, in order to improve the comparability of the insured people and the uninsured people and meanwhile eliminate the influence of other economic policies and correct the selection bias of study object, this article combines PSM (propensity score matching) method widely used for evaluating policy effect in quasi natural experiments in recent years and adopts the survey data covering 1% of nationwide population in 2005 to assess the impact of NCMS on the insured people's labor income under the condition of controlling individuals' health conditions and participating propensity. Particularly, different from most empirical studies in this field, we adopt the counterfactual test and PSM method to further verify the impact of NCMS on floating populations'/non-floating populations' working hour and hourly wage rate so as to deeply analyze the channel and the internal mechanism of NCMS for changing labor income and meanwhile verify our theoretical judgments.

Our study shows that for the key policy pilot region ---- Zhejiang Province, NCMS enables the rural labor populations' labor income to be increased by 6% and such positive influence is more significantly presented in the floating populations (non-local registered permanent residents), namely 12%, about RMB 92.

Meanwhile, the rural residents' income increase amplitude has exceeded government subsidy (in 2003, the gross premium was RMB 30, and the fiscal subsidy of Zhejiang Province was usually RMB 50.); this indicates that NCMS can significantly promote the rural labor income and the pulling coefficient of the government expenditure is 1.84, which is probably greater than the income effect of other policies such as new rural endowment insurance. (Jia Hongbo, 2014)[1].

Finally, viewed from the influencing mechanism of NCMS on rural residents' labor income, only the floating populations' labor supply level and efficiency wage (hourly wage) are significantly improved due to insuring, but such effect mechanism is not obviously presented in the local insured people and the average income effect brought by this medical insurance is even negative. This indicates that among the subjective factors determining rural residents' income level, the willing of going outside for employment is an important assignable variable and is also

[1] According to the calculation based on the general equilibrium model for two-period iteration, it is believed in the study that the rural residents' lifelong consumption-income level proportion is increased to 1.041,3 after new rural social endowment insurance is implemented, with the increase amplitude of 4.13%.

the link which shall be particularly designed in the process of perfecting the reimbursement and subsidy mechanism of NCMS.

In conclusion, cautious demonstration and verification are made in this article for the influencing mechanism of the assessment result of the average income effect brought by NCMS to the insured people. We believe that NCMS not only has important impact on rural residents' labor income, but also improves human capital and labor efficiency. Such findings have enriched the recognitions on rural medical insurance welfare effect for existing literatures. Meanwhile, these conclusions also indicate that NCMS may be more important than other subsidy policies in the aspect of intervening in rural labor market and will become the key system support for recreating the demographic dividend in China.

The rest parts of the article are as follows: the second part explains the system background and the theoretical assumption and proposes the theoretical framework on the basis of literature review; the third part gives the measuring strategy for this study; the forth part includes data and descriptive statistics; the fifth part reports standard measuring result and robustness test result; the last part is the summary of the article.

II. System Background and Theoretical Assumption

(I) NCMS background

In order to reduce the occurrence of such problems as rural residents' low insuring rate, poverty return caused by illness and poverty caused by illness after the implementation of original rural medical insurance, CCCPC and the State Council issued the *Decision about Further Strengthening Rural Health Work* (ZF [2002] No.13) on November 9, 2002 and proposed the requirement of "establishing and perfecting rural cooperation medical system and medical assistance system", marking the launch of new rural cooperation medical system policy (hereinafter referred to as "NCMS" project) in China. Since July 2003, pilot projects have been carried out in 252 counties (cities and regions) in China for "NCMS", covering 107 million rural pollutions. (Fu Xiaoguang, et al., 2012) [2] It can be said that the promotion of NCMS is a public

[2] On January 10, 2003, Ministry of Health, Ministry of Finance and Ministry of Agriculture formulated the Opinions on Establishing a New Type of Rural Cooperative Medical Care System. On March 24, 2003, the General Office of Ministry of Health issued the Notification for Doing Well the Pilot Work of Rural Cooperative Medical Care (JFF [2003] No. 47) and the pilot counties (cities) for rural cooperative medical care would be determined by the provincial government. In the first half year of 2003, the determination of pilot counties (cities) and formulation of scheme were completed, and new rural cooperative medical system was started to conduct in the second half year of 2003. As shown by the data, there was respectively 94, 87 and 71 counties (cities and districts) in east, central and west regions were incorporated into the pilot project among the first batch of 252 counties (cities and districts) in 2004.

medical insurance system established to solve most rural residents' problems of "poverty caused by illness and poverty return caused by illness". (Liu, 2004)

Till we obtained nationwide sampling survey data in 2005, the project has been promoted to (Bai Chong'en et al., 2012). NCMS pilot projects have been carried out in 678 counties (cities, regions) including 617 villages and covering 75.66% rural residents, with 179 million persons insured and 122 million persons having compensation benefits. (Ministry of Health, 2010) [3]

(II) Important contents of NCMS pilot policy

On August 25, 2003, Ministry of Finance and Ministry of Health jointly issued the *Notice of the Central Financial Government for Appropriating Subsidies to Financially Support the Rural Residents in Central and Western Regions to Join NCMS* (CS [2003] No.112) to specify the pilot project method and the financial subsidy standard, wherein according to the requirement, each rural resident needs to pay at least RMB 10 every year. The Central Financial Government provides RMB 10 as the subsidy to each rural resident outside the central and western regions every year except those in urban area, the financial subsidy for each rural resident in the central and western regions shall not be less than RMB 10 every year, and the financial subside for the rural resident in eastern regions shall be better to reach RMB 20.

On December 15, 2003, Ministry of Health, Ministry of Civil Affairs, etc., totally 11 ministries and commissions, jointly issued the *Guiding Opinion for Further Well Preparing NCMS Pilot Work*[4] to specify the launch of NCMS in the second half year of 2003 and no expansion of pilot projects quantity in 2004 as well as the requirement for the good pilot projects in four provinces, namely Jilin, Zhejiang, Hubei and Yunnan. Therein, the conditions for selecting pilot county (city) include: 1. the main principal shall pay high attention to the pilot project; 2. the pilot county (city) shall have good financial condition; 3. The Health Department shall have strong management ability and the medical and health organization has strong service ability; 4. The rural gross-roots organizations shall be relatively perfect.

Actually, for the operation of NCMS project, the Central Government issues the guideline for the implementation thereof and then the provincial and county-level governments independently design the implementation details of the projects, including pilot scheme and the specific clauses of the insurance. Therefore, these projects have strong self-selectivity at the beginning, not only limited by local financial resources, but also influenced by pilot region selection.

[3] Data sources: Ministry of Health of the People's Republic of China, Year Book of Health in the People's Republic of China, Peking Union Medical College Press.

[4] Ministry of Health, Ministry of Civil Affairs, Ministry of Finance, Ministry of Agriculture, Development and Reform Commission, Ministry of Education, Ministry of Personnel, Population and Family Planning Commission, Food and Drug Administration, State Administration of Traditional Chinese Medicine of the People's Republic of China, Poverty Relief Office.

(III) Theoretical assumption and literature review

What intervention effect can be generated by the medical insurance to the labor behaviors and market results? The classical theory of the labor economics can provide two important research approaches to us: the first one is the direct increase of health investment which is favorable for human capital accumulation and labor efficiency improvement and accordingly increasing labor income. The reason lies in that the medical insurance can reduce the direct payment for medical expenses and rural residents' precautionary savings with the increase of medical insurance and accordingly enable the rural residents to regularly arrange their consumptions, thus not only improving the health condition of the insured people, but also enabling the rural residents to adopt the economic resources originally used for preventing health risk for human capital investment or production investment in order to increase the insured people's income.

A lot of empirical literatures have verified the channel of influencing such labor income. Although many researches prove that NCMS can increase the insured people's medical service use rate by 5%, [5] it cannot significantly reduce the total medical expenses and even can increase the medical expenditures after joining the insurance (Wagstaff et. al, 2009; Lei and Lin, 2009; Yi et al., 2009; Babiarz and Miller, 2010). One of the important reasons is the large flexibility of the medical demands, especially for the old rural people and the rural residents with low income. Therefore, the reduction of the price effect brought by rural residents' direct payment shall be extremely obvious. (Ringel et al., 2002; Seshamani and Gray, 2004; Cheng Lingguo, Zhang Ye, 2012) It is worth noting that, the increase of the medical expenditures brought by NCMS will not generate "crowding-in effect" to consumption; in other words, the medical insurance, on the contrary, exerts strong positive influence on the rural residents' family consumption due to the reduction of the insured people's preventive savings. (Bai Chong'en, Li Hongbin, Wu Binzhen, 2012; Luan Dapeng, Ouyang Rihui, 2012). These studies can verify the theoretical precondition of the insured people for human capital investment or production investment, thus laying the empirical foundation for us to further discuss the possible labor market effect of NCMS.

The second framework for analyzing medical insurance and labor market is from the "pure compensation differentials" theory proposed and developed by Rosen (1986), Summers (1989), Gruber and Kruger (1991), et al.; in the labor market equilibrium model, the labor supply and the supply-demand equilibrium not only depend on wage level, but also depend on the compensating

[5] The medical expenditures are also classified in detail in some literatures. For example, it is found in Lei and Lin (2009) that NCMS only increases preventive medical service but does not improve the use rate of the regular medical services; Liu and Xu (2008), Sun et al. (2009) and Sun (2010) believe that NCMS only can effectively reduce the insured people's expenditures for serious illness treatment and cure, without any effect for other direct medical expenditures; Yu et al. (2010) and Yip et al. (2009) believe that NCMS can only increase the use rate of hospitalizing medical services, almost without any influence on non-hospitalizing medical services.

wage differential brought by the medical insurances provided by enterprises. In perfect competition market, the labor demand depends on the wage W and the undifferentiated medical insurance provided by enterprise j for laborer i according to the average level, and the cost is $C_{ij} = C_i$; the labor supply depends on wage W and laborer's preference ΔW_{ij} to the medical insurance provided by the enterprise, and the labor supply decision is mainly made on the basis of the effect difference V_{ij} between the medical insurance and the monetary wages, namely, value function $V_{ij} = U\left(W_{ij} - \Delta W_{ij}, 1\right) - U\left(W_{ij}, 0\right)$, [6] so the effect premium (economic rent) of the job becomes an important reason which influences laborer's job transfer and labor decision.

Based on the intervention effect on labor market of medical insurance inspection caused by above framework of the empirical literature, it has made two contributions: first of all, most scholars, in the different methods and datas, consistently found that enterprises providing medical insurance for labor have important role in intervention, namely "job lock effect". (e.g. Madrian, 1994a; Gruber and Madrian, 1994; Holtz-Eakin et al., 1996; Buchmeller and Valletta, 1996; Anderson, 1997; Madrian and Legren, 1998). [7]In particular, since the "lock effect" suppresses the mobility of labor force, hinders the transfer of labor between departments and reduces the matching degree of the labor market, the "lock effect" therefore is the most important influencing factors leading to a series of economic problems such as low efficiency and mismatching income (Gruber, 2000). Then, the researchers also found that due to the transfer relations between mandate health insurance provided by the enterprise and the wages, the growth of the medical insurance, on the contrary, will cause a decline in labor employment (scale and time) or an increase of part-time workers. [8](e.g. Gruber, 1994c; Card, 1992a, 1992b; Katz and Krueger, 1992; Card and Krueger,1994)

These research results, not only provide a clear train of thought for us to understand the supply and demand mechanism of the medical insurance on the labor market, but also in a more

[6] 1 stands for the enterprise providing the medical insurance, and 0 stands for the enterprise not providing medical insurance. Furthermore, such preference is determined by the laborer's valuation of the marginal dollar on the medical insurance. Therein, if the medical service cost is higher, α is larger; but if the medical insurance management cost is higher, α is more approaching to 0. Please refer to Gruber (2000) for the detailed explanation of the model.

[7] It is worth noting that different from "locked effect" object and mechanism of domestic research on medical insurance, the research premise of all research achievements based on medical insurance market in the United States is that, because individual pays nearly 40% higher than enterprise in the price of health care (Congressional Research Services, 1988; Cult, 1944), and there is no universal social medical insurance in United States, medical insurance of its residents (includes employment or employment through a family member) is closely connected with their workplace ([Employee] Benefits Research Institute, 2000). Therefore, there is labor "locked effect" for insurance coverage through workplace, or employer-insured. The research object of Chinese scholars mostly refers to labor mobility restricted by social medical insurance due to restrictions of household registration system or insurance reimbursement levels etc. (e.g. Qin Xuezheng, 2011; Yao Lijun, 2013).

[8] Specifically, if people hold a neutral attitude to the insurance increase without additional value preference, the rise of insurance premiums would bring down wages proportionally with constant actual income of the employees, which therefore does not affect labor supply; But if people have insurance preferences, insurance premiums rise will increase actual wages, and thus improve the labor supply. For expounding and proving of this model, please see the Summers (1989), Gruber and Krueger (1990) and Gruber (1994).

practical significance, from welfare or economic efficiency perspective, put forward the objective and feasible standard measurement for us to evaluate intervention effect of medical insurance on labor market. And the generally selected indicators of evaluation basis are the change of income. (Bartel and Borjas, 1977; Madrian, 1994a; Gruber, 2000)

On that account, this article puts forward theoretical assumptions on labor market intervention of NCMS as follows: results of social and enterprise medical insurance impact on labor income and their mechanisms are different: firstly, looking from the income results of laborers participating in the market, on the one hand, both will reduce precautionary savings of the participants, increase consumption expenditures of laborer, expand human capital or production investment. Therefore it has the function of increasing labor income. However, on the other hand, there is significant "job lock effect" in medical insurance undertaken by the enterprises. So the income increase will also generate offset effect and the general direction is not clear; But NCMS may exist adverse "labor release effect", which may [9]promote the mobility of the labor force, improve the matching efficiency of the labor market and further increase labor income of participants after breaking the limitation of non-local medical care.

Secondly, from the influence mechanism of labor market, the maximum differences between the two are reflected in the relationships with wages: there are alternative or transfer relations between the medical insurance burdened by the enterprises and wages. [10]So the following phenomenon will occur such as reducing actual wages, reducing the number of labor employment, extending the per capita labor time or increasing informal employment; (Gruber, 1994a; Culter and Madrian, 1998) In contrast, social medical insurance is an exogenous variable in enterprise employment cost and is the compensatory income of wages rather than alternative income, which is bound to have more obvious income effect on labor, increase labor supply quantity, reduce absolute working hours of per capita labor.

Before the research of this article, a few literatures have evaluated labor market effects of social medical insurance. Henriet and Rochet (2006), based on the data of Sweden, United States, Spain and Switzerland, found in the research that the public medical insurance can reduce the degree of income distribution inequality on macro level. A research most similar to ours is Gruber

[9] Although subsidies proportion of NCMS in non-local medical care is hierarchically reimbursed according to hospitalizing areas [and] service items, but compared with the situation prior to the implementation of the system, it has improved a lot.(Liu, 2004; Ning Manxiu, et al., 2014)

[10] There are mainly three types of transfer mechanism: the first one is similar to the tax transfer effect. Whether medical insurance of enterprises can be transferred to individual, depends on the elasticity of the medical insurance price demand. Only when the medical insurance money utility of participants is very high, complete transfer will occur; the second one occurs under conditions of complete inelasticity of labor supply; the third one will probably occur when labor demand is under completely elastic conditions. Therefore, if complete transfer is only from individual money utility on medical insurance, when labor supply is elastic, it will inevitably cause unemployment effect of medical insurance and it will not cause any employment effects in case of inelastic labor supply. For detailed mechanism of this part, please see Gruber and Krueger (1991) and Gruber (1994a).

and Hanratty (1995)'s research on Canada's National Health Insurance. [11]By using DID method and making comparison among provinces implemented the insurance and those not, the study found that social insurance is conducive to improving the level of employment and wages. A usual explanation of this results is, even if it will cause a certain impact on employment level, the important earnings of the insurance (mainly through reducing the effect of "job lock") exceeds the cost of unemployment (Gruber, 2000).

Due to the limitation of data, there are few studies in this field conducted by domestic scholars. The more important achievements is the evaluation of Qi Liangshu (2011) using the national and provincial panel data from 2003 to 2006, on the effects of poverty reduction, income increasing and redistribution of NCMS. It is believed in the study that the NCMS can significantly promote the income of rural residents of the low and middle income, but it needs favorable external economic support. At the same time, NCMS does not have a significant impact on the income distribution of rural residents within the scope of provinces and regions. Li Liqing et al. (2013), based on the data of CHNS2000, 2004, 2006 and 2009 and using the difference-in-difference method, measure the income increasing and poverty reduction effect of NCMS on farmers. The results show that the NCMS has significantly positive effects on farmers' income and can increase household income per capita of participants by 8.94% (Gruber, 2000).

The above studies, by adopting the difference–in-difference and IV method, better handle the effect of selection bias and factors which cannot be observed, which is the key in empirical research of medical insurance. Yet though Gruber (2000), , because such studies are mostly based on the calculation of the average household income of participants, found obvious evidence of NCMS increasing farmers' income, but as Bartel (1982) and Topel and Ward (1992) pointed out, owing to generally higher aging population proportion among its participants, the average income of all the participants as the proxy variable of real income would underestimate the contribution of medical insurance to alleviating labor "lock effect" and income growth. In addition, although these two literatures control the main individual characteristics (such as gender, health degree, age, level of education), previous empirical results also found that, if there are premium rate differences between enterprises, or there is substitution of capital for labor within different departments, medical insurance will be likely to influence employment in specific enterprise or labor departments. (Danzon, 1989; Sheiner, 1989b; Ballard and Goodeeris, 1993). Therefore, difference in different departments and industries must be controlled during the measurement design of testing income influence.

[11] This insurance is the medical insurance system financed by Canadian through income tax and social security tax, covering the whole country, whose implementation is carried out step by step in different provinces. (Gruber and Hanratty, 1995)

On the whole, the functional mechanism of NCMS influencing labor income has not been analyzed and its result also has not been verified yet; what's more, the research methods also need to be improved further. With the privilege of taking advantage of the 1% nationwide population survey data in 2005 and the application of PSM method, this article not only can estimate the labor income effect of NCMS, but also can judge and verify the influence mechanism of this social medical insurance system on rural labor force mobility, wage, and employment status. In a manner of speaking, this article is the first attempt at this problem in this field.

III. Measuring Strategy

In order to recognize the influence of NCMS on the incomes of insured population, what we are thinking about is that for the insured laborers, if other factors remain the same and they hadn't participated the NCMS, what happens to their incomes? Comparing and observing the incomes of one individual both under insured state and uninsured state at the same time, the difference we get between these two is the "net income effect" brought by NCMS. However, since we only can observe one result in reality, counterfactual outcome of this individual is required to be built. What needs to be noticed is that the insurance participation of rural residents normally is nonrandom behavior (voluntary participation), it's depends on the physical condition of individuals, regional economic development and other factors[12], in the meantime, these factors also have influence on personal labor capacity and income level. Therefore, simply comparison between the incomes of insured population and uninsured population will inevitably result in selection bias.

At present, extensive application of PSM method in policy effect evaluation can effectively overcome this measuring problem. This method was first put forth by Roy (1951) and Rubin (1974), which is a effective means to solve the problem of self-selection bias during policy effect measurement by quasi natural experiment approach. The basic idea is by controlling proper quantity of characteristic vectors of individual $\{X_i\}$, to estimate the propensity score of each individual who has joined the project (receiving treatment) $p(X_i) \equiv E(D_i \mid X_i)$ (D is treated dummy variable when taking 0 or 1),[13] take the insured/uninsured individuals who share the same or closest propensity score as mutual matching treatment group / control group, and take the difference of treatment outcome among the mutual matching individuals as the average treatment

[12] As mentioned in above background introduction, instead of random selection, the pilot and promotion process of this project is selective. The selection of pilot regions is influenced by its own economic development and medical organization level; due to the NCMS subsidy policy largely depends on the payment capacity of local government, promotion strategy step by step in the sequence of counties (cities and regions) is also adopted even in the key pilot regions.

[13] This score under the calculation form of probit model is shown as $probit(NCMS_i = 1 \mid X_i) = \alpha + \beta X_i + \varepsilon_i$

effect on the treated (ATT) of this policy under the circumstance that the matching samples satisfy the conditional independence assumption (CIA) and common support or overlap condition.

To be more specific, if individual i is taken as the participant group, then the treated dummy variable $NCMS_i$ shall be 1; otherwise, it shall be 0. So the treatment results y_i shall have the forms below:

$$y_i = (1 - NCMS_i) y_{0i} + NCMS_i * y_{1i} = y_{0i} + (y_{1i} - y_{0i}) * NCMS_i$$

Wherein, $(y_{1i} - y_{0i})$ is the treated effect, its value of expectation is the average treatment effect (ATE), which is represented as $ATE \equiv E(y_{1i} - y_{0i})$;

While the average treatment effect on the treated (ATT) of participants that we care about is expressed as

$$ATE \equiv E(y_{1i} - y_{0i})$$

Simply comparing the sample treatment results of insured/uninsured group, we will get

$$E(y_{1i} \mid NCMS_i = 1) - E(y_{0i} \mid NCMS_i = 0)$$

$$= \underbrace{E(y_{1i} \mid NCMS_i = 1) - E(y_{0i} \mid NCMS_i = 1)}_{\text{ATT}} + \underbrace{E(y_{0i} \mid NCMS_i = 1) - E(y_{0i} \mid NCMS_i = 0)}_{\text{Selection Bias}}$$

Thus it can be seen that the substance of PSM is to select and construct the counterfactual result $E(y_{0i} \mid NCMS_i = 0)$ from uninsured group that is closest to participants, thus eliminating the selection bias to the largest extent. （Rosenbaum and Rubin, 1983; Caliendo and Kopeinig, 2008）

Hence, PSM possesses an obvious advantage on minimizing the bias of estimated results, as it loosens the assumption of traditional regression model parameter distribution and also doesn't rely on the setting of concrete model form. (Imbens, 2004; Abadieand Imbens, 2006a) But in the meanwhile, it cannot inspect the influence and transmission mechanism of policy variables on treated results, because PSM can disregard the concrete form of model setting.

Considering the implementation features of NCMS, and the advantages of PSM on treating the large sample data, with the combination of the theoretical assumption on NCMS labor market interventional mechanism we mentioned above, we designed below two measurement processes：

The first stage is to take advantage of the above mentioned matching method to construct counter-factual outcome and estimate the welfare effect (The change of labor income) of NCMS, namely $\delta_{ATT} = E(y_{1i} \mid NCMS_i = 1) - E(y_{0i} \mid NCMS_i = 0)$.

The second stage is to test the influence mechanism of this treatment effect. According to the theoretical assumption frame mentioned above, we choose unit hourly wage rate and per capita working hour as the measurements to empirically examine the influential effect of NCMS on human capital and labor supply.

IV. The Descriptive Statistics of Data and Variables

(I) Data

The data used in this article comes from 1% nationwide population survey data in 2005, which is collected by the state council in nationwide household sampling survey to sort out the changes of size, composition and inhabitancy of the population since 2000; the respondents are sampling households who have had the nationality of the People's Republic of China since November 1, 2005; the survey samples are 1% families that chosen from the population of various provinces, cities, autonomous regions and direct-controlled municipalities in china; the survey projects include basic conditions, migration flows, population quality, employment, social security, marital and fertility status etc. of family members of residents. This database provides us huge convenience on investigating the policy effect of NCMS: First, the information it contains is collected two years after the implementation of NCMS pilot project, and remarkable effect has been achieved in many key regions (Baicker and Chandra, 2005; Sun, et al., 2009) ; Second, due to the NCMS was still in pilot promotion period in 2005, the insured and uninsured individual samples is adequate and representative that enabled the treatment effect to be measured by multiple PSM methods; Third, Because there were large amounts of dimension in the database that describes the features of individual samples, it's conductive to reflecting the policy influence of NCMS on various groups at multi-levels and multi-channels. (e.g. Madrian,1994a; Gruber,1994a; Gruber and Hanratty, 1995)

In order to better capture the interventional effect of NCMS on labor market in its promotion period, we conduct below treatments on original samples: First, we only take the labor force population (16-60 years old) with rural registered permanent residence into account, meanwhile, only reserve the labor income and get rid of samples with zero income; Second, in order to control the disturbance of unobservable factors with NCMS participation effect, we only sample Zhejiang Province with relatively high and balanced economic development level, as our research object, which is also one of the four key pilot regions of NCMS promotion, its early implementation of NCMS is conductive not only to the control of the economic disparity characteristics within province, but also to the measurements of effect; Third, since one of our research purposes is to investigate whether the NCMS has the function of releasing the mobility of labor force so that it can improve the labor income, the sample selection of Zhejiang Province also complies with the sample requirement that floating population shall account for higher rate; in the meantime, we only kept the migration population data caused by employment or business. By means of above treatment, the data we finally used is the samples with rural registered permanent residence and

labor incomes, which were chosen from 10 prefecture-level cities in Zhejiang Province in 2005. The regression samples of this data totally has 8,319 observed values, of which there are 7,030 samples belong to control group （never participated in the NCMS）, and 1,289 samples are from treatment group (participated in the NCMS).

(II) Variables

For the purpose of measuring the welfare effect of NCMS and examining the influence mechanism of it on labor market, we mainly focus on three changes of treatment results: labor income, unit hourly wage rate and per capita working hour. The first variable reflects the effect of NCMS on labor income results; the latter two items examine the theoretical mechanism of NCMS on labor market intervention. [14] At the same time, we also refer to the variables adopted by foreign scholars (such as Gruber (2000), Wang et al. (2008) and Wagstaff et al. (2009)) in the multi-level models regression when testing medical insurance, and select the indexes that can reflect the gender, economic social status, and policy understanding ability and so forth as the individual control variables in demonstration. The statistical characteristics of various variables are shown in Table 1-4 below:

[14] In order to satisfy the empirical requirements of labor income, per capita working hour and unit hourly wage rate, we select the “income of last month” logarithm of the samples as the proxy variable of labor income, adopt the “work time of last week” logarithm of original samples as the proxy variable of per capita working hour, and treat the observed value of “income of last month” and “ work time of last week”, then convert them into the logarithm of hourly wage as the proxy variable of unit hourly wage rate.

Table 1 Statistical Characteristics of the Regression Sample's Main Variables

variable	Mean	Sd	Min	Max
Labor Income Logarithm	6.830	0.460	3.910	10.82
Working Hour Logarithm	4.040	0.260	0.690	4.600
Hourly Wage Logarithm	1.330	0.510	-1.790	5.340
Participate in Medical Insurance	0.150	0.360	0	1
Registered Residence	2.770	0.550	1	3
Local Registered（not）	0.840	0.370	0	1
Gender (Male)	0.600	0.490	0	1
Health Degree (Healthy)	2	0.0200	1	2
Marital Status (Married)	0.720	0.450	0	1
Date of Birth	1974	9.250	1944	1989
Reasons for Leaving Registered Residence (Business or Labor) *	1	0	1	1
Only Child (Yes)	0.0800	0.260	0	1
Educational Background *	2.770	0.720	1	6
Engaged Industry *	39.31	19.57	1	97
Age Surveyed	31.11	9.250	16	60
Labor Group *	2	0	2	2
Source of Income (Labor) *	1	0	1	1
Residence Type (Agriculture)	1	0	1	1
No. of Prefecture-Level City *	3304	2.950	3301	3311

Notes: For each dummy variable, the state in parentheses is taken as 1.

* refers to multiple-value classified variables.

Table 2 Variables of Regression Sample in Participant and Non-Participant Groups

	Participant					Non-participant					Diff in
variable	Obs	Mean	S.Dev	Min	Max	Obs	Mean	S.Dev	Min	Max	mean
Labor Income	1289	1284	1774	0	50000	7030	1001	650.9	0	20000	282.3***
Working Hour	1289	54.51	13.54	0	99	7030	58.94	14.15	0	99	-4.43***
Hourly Wage	1281	5.851	8.771	0	208.3	6998	4.185	3.374	0	116.7	1.67***

Note：all variables are in real value，*** $p < 0.01$

Table 2 indicates that the samples' average income logarithm of the participant group is all higher than that of the non-participant group, the working hour is shorter and the hourly wage is slightly higher. Table 3 shows the variable of registered permanent residence sample in different region's for investigating the labor mobility effect of NCMS. It can be seen that, if NCMS factors

are not taken into account, local rural residents still earn more, work shorter and have slightly higher hourly wage than non-local residents. Interestingly, it is quite obvious that, if we further make groups by whether they participate in the NCMS, the income difference caused by participating in the insurance (the income of the insured is all higher than that of uninsured population.) is more evident among non-local population (refer to Table 4).

Although generally consistent with our theoretical expectations and effect judgments, these variable differences reflected in the above samples are still required to be corrected further by means of PSM method, because these differences are result of unbalanced samples subject to direct observation, there are selection bias, and we cannot decide the treatment effects resulted solely from the NCMS policy.

Table 3 Treated Variables in Local and Non-Local Groups

	Local (City, County and Township)					Non-local (City, County and Township)					Diff in mean
Variable	Obs	Mean	S.Dev.	Min	Max	Obs	Mean	S.Dev.	Min	Max	
Labor Income	1370	1255	1733	0	50000	6949	1004	650.3	0	20000	251.6***
Working Hour	1370	52.52	13.87	0	99	6949	59.38	13.93	0	99	-6.86***
Hourly Wage	1356	5.868	8.714	0	208.3	6923	4.163	3.290	0	116.7	1.705***

Table 4Treated Variables in Insured/Uninsured and Local/Non-Local Groups

	Non-participant										Diff in mean
	Local					Non-Local					
variable	Obs	Mean	S.Dev.	Min	Max	Obs	Mean	S.Dev.	Min	Max	
Labor Income	699	1191	1131	0	20000	6331	980.5	570.1	0	12500	210.6***
	Participant										Diff in mean
	Participant					Non-Local					
variable	Obs	Mean	S.Dev.	Min	Max	Obs	Mean	S.Dev.	Min	Max	diff	P-val
Labor Income	671	1322	2189	0	50000	618	1242	1168	100	20000	80.5	0.416

V. Treatment Effects of the NCMS Policy

This part, according to the empirical strategies in Part III, successively makes a measurement regression analysis of the policy treatment effects based on three groups of treatment results of NCMS participants: labor income, working hour and unit hourly wage. According to the requirements of PSM method, we need to: firstly, calculate the propensity scores of participation in the NCMS based on the insured and uninsured samples at the same time; secondly, conduct the equilibrium and common support test for the samples that have been matched based on specific methods, in order to satisfy the PSM theoretical premise of quasi natural experiment regression;

lastly, provide the causation regression effects of the three groups of treatment variables that we are concerned about, in order to measure result and impact mechanism of the NCMS policy's intervention on labor market.

(I) OLS regression results based on matching idea

In order to improve the reliability of the PSM method and provide regression results that can be referred to, we firstly use the PSM idea to intercept common support samples for regression calculation by calculating the propensity score determined by the individual characteristic value, on the premise of identical participating willingness of both the control group and treatment group samples.

Specifically, the first step is to get the propensity value based on the following probit model,

$$pscore(X_i) \equiv probit(NCMS_i) = \alpha + \beta X_i + \varepsilon_i$$

Wherein, $NCMS_i$ refers to dummy variables of individuals participating in the NCMS among all regression samples, and the assignment of participants is 1 and that of non-participants is 0. X_i refers to a series of covariates that reflect individual with participating willingness and regional characteristics, including income logarithm, health degree, gender, educational background, the engaged industry, profession, marital status, whether to participate in endowment insurance and other variables.

The second step is to establish common support samples of the control group and treatment group based on the calculated propensity value, treat the result variables of labor income, working hour and unit hourly wage respectively, and conduct regression tests of variables such as participation in the NCMS, prefecture-level city, situation of registered permanent residence, the only child (Yes/No), education years, the engaged industry, marital status, gender and health degree.[15]Table 5 provides the OLS regression result based on this matching idea.

[15] Notes: These variables are all set as dummy variables of (n-1) policies or characteristics according to the number (n) of their values.

Table 5The Impact of NCMS on the labor income results（OLS）

Dep. Variable：Labor income

Independen t variables	(1) Panel A	(2) Panel B	(3) Panel C	(4) Panel A	(5) Panel B	(6) Panel C
NCMS	0.009	-0.146**	0.058**	0.238***	0.267	0.219***
Participants	(0.42)	(-2.25)	(2.46)	(5.22)	(0.83)	(5.19)
Non-Local	0.051**			0.135***		
Residents	(2.25)			(4.97)		
r2_a	0.144	0.171	0.149	0.120	0.092	0.138
N	4076	455	3621	4076	455	3621
Dep. Variable：Working hours						
NCMS	-0.048***	0.027	-0.077***	-0.163***	-0.131	-0.163***
Participants	(-3.73)	(0.99)	(-5.03)	（-5.90）	(-0.98)	(-5.94)
Non-Local	0.097***			0.058***		
Residents	(7.21)			（3.53）		
r2_a	0.081	0.020	0.066	0.0748	-0.048	0.059
N	4130	473	3663	4061	455	3606
Dep. Variable：Hourly Wage						
NCMS	0.059**	-0.163**	0.136***	0.404***	0.398	0.384***
Participants	(2.51)	(-2.43)	(5.14)	(7.88)	(1.16)	(8.06)
Non-Local	-0.047*			0.079***		
Residents	(-1.89)			(2.61)		
r2_a	0.167	0.167	0.172	0.123	0.029	0.151
N	4061	455	3606	4061	455	3606
Prefecture-Level City	Yes	Yes	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes	Yes	Yes
Occupation	Yes	Yes	Yes	Yes	Yes	Yes
Individual characters	Yes	Yes	Yes	Yes	Yes	Yes

Note: panel A is the full sample, panel B is the sample from local residents, panel is the sample from non-residents. Column (1) - (3) is the simple OLS regression results, column (4) - (6) is the OLS results based on matching method. All returns have controlled following dummy variables: cities dummies including 10 prefecture-level cities in Zhejiang; Education dummies including dummy variables from illiteracy to graduate level; Occupation dummy including 19 industry sectors in national economy; whether individual dummies including the one-child, marital status and health status.

t statistics in parentheses. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

(II) Matching regression results based on PSM method

We know that in order to enable the estimated results resulted from PSM regression to correct the selection bias in the implementation of policy, inspections on the matching situation of the treatment group and control group must be done before regression to satisfy the sample equilibrium requirements and common support assumptions which ensure effective estimation of PSM (Caliendo, Marco and Kopeinig, Sabine, 2008). This requires that no systematic disparity of

distribution in all of the main characteristic vectors should exist after the insured and uninsured samples have been matched according to the propensity value. Our inspection results (refer to Table 6) indicate that the treatment group and control group, after matching, have no systematic disparity in main individual characteristics; the distribution of their characteristic values is consistent, which means that samples that have been matched according to the probability of participation are nearly identical in all aspects.

At the same time, since the regression method based on PMS is most effective in the treatment group and control group samples' overlap or common support regions, enough samples with similar or identical propensity score can be provided for regression estimation. Visual density distribution of propensity score can be adopted to even more visually inspect such sample matching situation. (Heckman et al., 1997; Caliendo and Kopeinig, 2005). Our inspection results also indicate that after matching the propensity score of the samples of participants and non-participants has sufficiently large overlap regions and nearly none of them fall outside the common support regions, thus ensuring the better representativeness of average treatment effect (ATT) obtained. (refer to Appendix Figure 1)

Table 6 Test of Sample Balance Before and After PSM

Variable	Sample	Mean		%reduct		t-test	
		Treated	Control	%bias	bias	t	p>t
Gender	Unmatched	1.413	1.446	-6.8		-1.41	0.159
	Matched	1.413	1.407	1.2	81.9	-2.26	0.024
Date of birth	Unmatched	1980.7	1981.5	-18.9		-3.91	0.000
	Matched	1980.7	1980.6	2.6	86.4	3.82	0.000
Registered Residence	Unmatched	2.337	2.903	-87.1	98.6	-25.46	0.000
	Matched	2.337	2.346	-1.3		24.11	0.000
Health	Unmatched	1.002	1.0028	-1.2	-164.4	-0.21	0.832
	Matched	1.002	1	3.2		0.64	0.519
Educational Background	Unmatched	3.285	2.928	55.3	96.0	12.05	0.000
	Matched	3.285	3.299	-2.2		-13.49	0.000
Occupations	Unmatched	63.819	68.644	-24.5	96.0	-5.54	0.000
	Matched	63.819	64.012	-1.0		7.57	0.000
Marital Status	Unmatched	1.447	1.459	-2.2	82.2	-0.46	0.645
	Matched	1.447	1.449	-0.4		2.88	0.004
Age	Unmatched	24.047	23.283	18.3	82.4	3.79	0.000
	Matched	24.047	24.181	-3.2		-3.59	0.000
Only Child	Unmatched	0.118	0.0697	16.7	45.4	3.82	0.000
	Matched	0.118	0.091	9.1		-2.78	0.006

Note：T test results show that whether there is a significant difference in the mean of sample group after matching. Relative to other characters, the differences in health status plays the most important role in participation decision, which has shown by the Probit results. It

is shown that we can't refuse the hypothesis that there are no systematic differences between the two groups, which meets our requirement to eliminate endogeneity in regression. Other variables (e.g., gender, date of birth, whether the one-child, marital status and age), in our research, are considered of less important in participation decision.

On the basis of the sample matching that satisfies the PSM requirements, we estimate respectively the average treatment effect (ATT) of NCMS on labor income, working hour and unit hourly wage. Refer to Table 7 for the results.

Table 7 The Impact of NCMS on treated variables using PSM

	Labor Income			Working hours			Hourly wages		
	Panel A	Panel B	Panel C	Panel A	Panel B	Panel C	Panel A	Panel B	Panel C
1vs.1	0.062***	-0.091	0.122***	-0.110***	-0.006	-0.096***	0.172***	-0.086	0.219***
match	(3.05)	(-1.61)	(4.99)	(-9.24)	(-0.25)	(-6.31)	(7.58)	(-1.46)	(7.91)
r2_a	0.002	0.004	0.007	0.020	-0.002	0.011	0.014	0.003	0.017
N	4062	448	3609	4051	448	3598	4047	448	3594
C.S.	4048	442	3610	4037	442	3598	4033	442	3585

Note: t statistics in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01

Panel A is the full sample, panel B is the sample from local residents, and panel is the sample from non-residents. C.S：Numbers of observations in Common Support. Covariates are showed in table 6.

(III) Estimation of robustness results

In order to ensure the reliability of inspection results herein and eliminate biasness of the above one-to-one sample matching estimation as a result of sample lost, we further improve our inspection results based on different matching methods and varied parameter settings. As each method has its own estimation advantages for different data structures, only the large sample estimation has asymptotic consistency (Dehejia and Wahba, 2002; Smith, Todd, 2005) and meanwhile there are different levels of trade-offs between improvement of matching precision and loss estimation accuracy. (Smith, 2000; Zhao, 2000) Therefore we adopt the common methods such as One-to-multiple Sample Matching, k Nearest Neighbour Matching, Caliper& Radius Matching, Kernel Matching and Local Linear Matching to examine the robustness of the above PSM estimation results. Refer to Table 8 for the results.

Table 8 Robust estimation on NCMS impact

	Labor Income			Working hours			Hourly wages		
	Panel A	Panel B	Panel C	Panel A	Panel B	Panel C	Panel A	Panel B	Panel C
1vs.4	0.062***	-0.091	0.122***	-0.110***	-0.006	-0.096***	0.172***	-0.086	0.219***
match	(3.05)	(-1.61)	(4.99)	(-9.24)	(-0.25)	(-6.31)	(7.58)	(-1.46)	(7.91)
N	4062	448	3609	4051	448	3598	4047	448	3594
C.S	4048	442	3601	4037	442	3598	4033	442	3585
caliper	0.062***	-0.091	0.122***	-0.110***	-0.006	-0.096***	0.172***	-0.086	0.219***
match	(3.05)	(-1.61)	(4.99)	(-9.24)	(-0.25)	(-6.31)	(7.58)	(-1.46)	(7.91)
N	4062	448	3609	4051	448	3598	4047	448	3594
C.S	4048	442	3600	4037	442	3588	4033	442	3584
radius	0.062***	-0.091	0.122***	-0.110***	-0.006	-0.096***	0.172***	-0.086	0.219***
match	(3.05)	(-1.61)	(4.99)	(-9.24)	(-0.25)	(-6.31)	(7.58)	(-1.46)	(7.91)
N	4062	448	3609	4051	448	3598	4047	448	3594
C.S	4048	442	3600	4037	442	3588	4033	442	3584
kernel	0.062***	-0.091	0.122***	-0.110***	-0.006	-0.096***	0.172***	-0.086	0.219***
match	(3.05)	(-1.61)	(4.99)	(-9.24)	(-0.25)	(-6.31)	(7.58)	(-1.46)	(7.91)
N	4062	448	3609	4051	448	3598	4047	448	3594
C.S	4048	442	3610	4037	442	3589	4033	442	3585
LLM	0.062***	-0.091	0.122***	-0.110***	-0.006	-0.096***	0.172***	-0.086	0.219***
	(3.05)	(-1.61)	(4.99)	(-9.24)	(-0.25)	(-6.31)	(7.58)	(-1.46)	(7.91)
N	4062	448	3609	4051	448	3598	4047	448	3594
C.S	4048	442	3601	4037	442	3598	4033	442	3585

Note:*t* statistics in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Caliper matching is a 1 to 4 match using radius of 0.03, which is in accordance with 0.25 times of the standard deviation (0.025). Radius matching uses the caliper of 0.03.

(IV) Comments on regression results

As shown above, not only the regression sample between participating and non-participating groups is in equilibrium, but also the results of matching estimation basically conform to our theoretical expectations and have good statistical significance.

Firstly, from the view of the direct effect of NCMS policy's intervention on labor market, despite of slight difference, the impact magnitudes resulted from different methods all present significant positive impact on labor income (about 5%); the figure is very close to Qi Liangshu's (2011) estimation result (4%) which was based on individual farmers' income, and the empirical findings (4%) done by Gruber and Hanratty (1995) on Canada's National Health Insurance. But the figure is lower than the result (about 9%) calculated by Li Liqing et al. (2013) based on the average income, which demonstrates that if the last method is adopted, overestimation effects may arise in the selection of proxy variables.

Secondly, from the view of the impact mechanism of NCMS policy's intervention on labor market, the above regression results are identical to our theoretical assumptions: medical insurance can guarantee to some extent the rights of rural participants, thus increasing the labor efficiency and hourly wage rate (about 17%) as a result of helping them increase consumption and labor and material investment; meanwhile, the NCMS has strong negative impact on labor supply and therefore reduces participants' employment working hour by 10% which is higher than the estimation result (an decrease of 3-6%) gained by Gruber and Hanratty (1995) about the unit working hour. This is actually just the case advanced in the earlier theoretical discussion, that is, with the improvement of social medical care ability, the number of labor employment by enterprises increases, thus decreasing unit working hour. So from this point of view, the NCMS can really enlarge employment scale.

Thirdly, when we further discuss the function mechanism of NCMS on important changes of labor market, we must analyze from the perspective of improving the efficiency in the labor market. The theoretical analysis above points out that the "release effect" of NCMS on labor is probably the most important way of impact. And that's why we add the regression process of sub-household samples to our empirical analysis. As shown in the result, NCMS has more evident influence on floating participants (non-local resident samples) than local participants (local resident samples) in the aspect of labor income, working hour or hourly wage rate. And policy effects become more important; on average, a labor income increase of 20% will lead to an increase of about 50% on wage rate. It is worth noting that, seen from the regression result, the growth rate of labor income is exactly equal to the sum of working hour and wage change rate, that is, it satisfies the following equation:

$$\ln(\text{laborwage}) = \ln(\text{working hour}) + \ln(\text{wage rate})$$ [16]

This not only verifies our assumptions of NCMS impact mechanism through the numerical relation, but also indirectly verifies the great impact of NCMS on improving matching rate of labor market, economic efficiency and social welfare.

VI. Conclusion

As a social system that protects social labor, the NCMS can reduce precautionary savings of residents and increase consumption and investment expenditures. But, where does the income mechanism behind this kind of consumption and investment expenditures increase come from?

[16] In order to measure the flexibility of policy effects, logarithmic form is adopted to record the explained variables in the treatment results; and the non-linear model we get just satisfies the relation (labor income = working hours * wage rate), which just verifies the correctness of theoretical framework we advanced.

Does this expenditure growth conform to the investment assumption in human capital related to the classical labor economic theory and therefore improve labor market outcome? What is the impact mechanism if the medical insurance can improve labor income? Based on the date about NCMS participants in 2005, this article takes the method of quasi natural experiment, explaining these questions from a quantitative perspective.

Theoretical literatures indicate that medical insurance is in favor of improving people's health, human capital level and income; at the same time, social medical insurance offered by the government may have the release effect on accelerating labor mobility, thus improving the efficiency of the labor market and further improving the income effect of insurance. Since its implementation in 2003, the NCMS has become a rural social security system which has been the first to be implemented in China at present with widest coverage. Does the NCMS can increase farmers' income and expand rural labor supply? How does the internal mechanism of the NCMS work? As China now faces a loss of demographic dividend, judging and understanding these questions above are of important practical significance. However, up to now no scholar has done a systematic and in-depth quantitative analysis on this issue. Based on the data of 1% nationwide demographic census in 2005, this article uses the PSM method and empirically studies the impact of NCMS on income level, human capital and labor supply in the rural labor market; it also verifies our theoretical assumptions about internal mechanism. According to our study, the average labor income of NCMS participants is about 6% higher than that of non-participating population, and the NCMS shows more significant impact on floating population. Specifically, among floating population, the labor income of participants increases by 10%, the labor supply 10% and the wage rate 20%. This conclusion means that with the full realization of NCMS, China is likely to continue to enjoy low-cost demographic dividend for some time, but the improvement of rural labor's production efficiency and income ability still depends on further perfection of NCMS on promoting labor mobility and other aspects.

According to existing literatures, as this article is the first research attempt of this matter in this field, available data are limited and inadequacy on this study still exists. Further exploration may include: firstly, judgment on the time effect of the NCMS policy, in other words, how fast the NCMS policy influences the labor market (namely, how long the impact will occur and whether it is a long-term effect or short-term effect)?

Secondly, timing of the policy selection. For people enjoying this policy, does the changes on welfare brought by the NCMS are nominal or practical? Does "money illusion" exist in labor supply? If such impact exists, it further explains that the policy's impact on labor market is subject

to different macro economic conditions; for example, inflation may reduce the medical insurance's impact on labor market.

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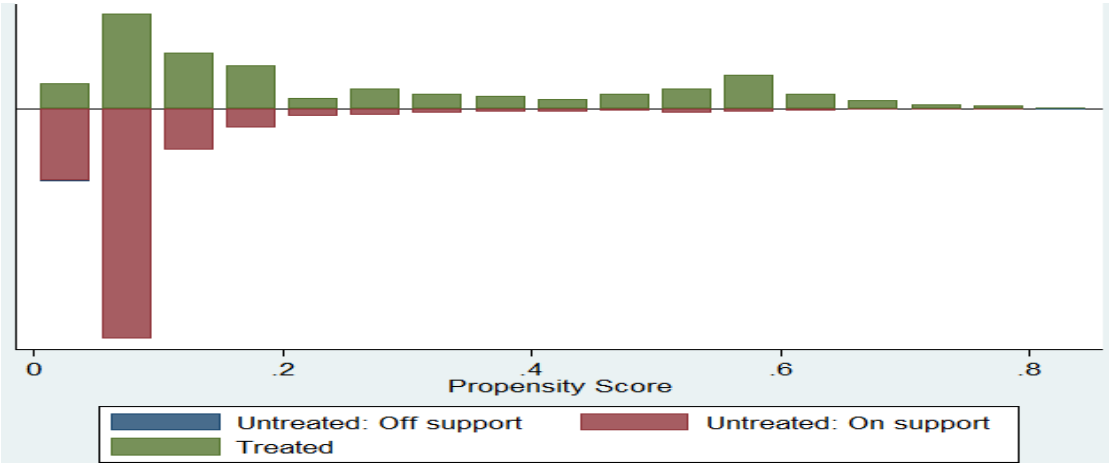
Appendix

Table 1 First Stage Results of Probit Regression in PSM

Participation	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
Gender	0.008	0.0580	0.14	0.890	-0.106	0.122
Date of birth	-0.0625	0.0697	-0.90	0.370	-0.199	0.074
Registered Residence	-0.7706	0.0437	-17.65	0.000	-0.856	-0.685
Health	-0.4271	0.7301	-0.58	0.559	-1.858	1.004
Educational Background	0.4532	0.046	9.84	0.000	-.3629	-.5434
Occupations	0.0017	0.0015	1.15	0.249	-0.001	0.0047
Marital Status	-0.0625	0.0736	-0.85	0.396	-.2067	.0818
Age	-0.0314	0.0699	-0.45	0.653	-0.1684	0.1055
Only Child	0.1496	0.0976	1.53	0.125	-0.0417	0.3408

Figure 1 Test of Common Support after Matching



Note: There is no samples from treated group fall outside the common support.