An Empirical Analysis of China's New Cooperative Medical System: From a Policy Perspective

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近年来，农民看病难、看病贵、因病致贫、因病返贫等问题日益成为社会关注的焦点。为了减轻农民的医疗支出负担，改变农民无钱治病的状况，2002年中国政府提出建立新型农村合作医疗。本文利用抽样调查数据从农民的需求情况、参与情况、认知情况和获益情况四个方面具体考察了新型农村合作医疗的运行状况。研究表明，目前农民对新型合作医疗具有强烈的需求，但是由于新型合作医疗本身制度设计的问题，影响了一部分农民的参与和制度的可持续发展。

I. Introduction

The Chinese national government has launched a new stage of rural development. The construction of a new socialist countryside has been regarded as a new rural development strategy in the recently ended National People's Congress and as the top policy priority of the Eleventh Five-Year Plan. Increasing investment in rural areas and ensuring good public services, such as health care and education, have been the key elements of these documents. However, while recognizing the new opportunities for improving the rural health care system, it is important to understand the evolutionary process of the current rural health service system and the likely impact on household healthcare.

Health is an important factor in the process of economic development.[1] Unfortunately, despite the importance of having a strong health care system during the period of economic reform, China's rural health system has deteriorated. In the pre-reform era, a cooperative medical system (CMS) was created that provided most rural residents with free basic health care services.

In the late 1970s, the CMS covered more than 90 percent of the rural population. However, with the advent of the household responsibility system there was a widespread collapse of the rural health care network and the CMS.[2] Consequently, a considerable number of rural residents are not able to afford even basic health care,[3] and the utilization of basic health services by farmers has actually fallen. According to a number of community surveys, major illnesses are the primary reason households fall into poverty.[4]

Recognizing the serious problems in the rural health system, China's government initiated a new rural health program in 2003, the *new cooperative medical system* (NCMS),

to meet both the outpatient and inpatient needs of rural households, and promised to extend it to China's entire rural area by 2010.[5] In the first year of the program, pilot programs were started in 162 counties in 17 provinces. In a typical program, the national/provincial and local governments each contributes 10 yuan per capita to the local NCMS budget, a total of 20 yuan per capita. The contributions are supposed to be used solely for reimbursing health costs, and other administrative and promotion costs are supposed to be met from the fiscal resource of the local government. The government has committed more than 17 billion yuan to finance the program.

In addition to the government's prominent role in the provision of NCMS, farmers are also expected to participate on a voluntary basis. The program participant must pay an additional 10 to 15 yuan per year, which makes the NCMS revenue 30 to 35 yuan per participant per annum. Although the coverage of services varies from place to place, according to national policy, inpatient and outpatient services are both supposed to be met.

Surprisingly, despite such an ambitious goal and the prospect of such a huge outlay of funds, there have been almost no efforts by economists reported in the literature that evaluates China's NCMS. There is no empirical economic literature outside China that evaluates the program. Studies inside China are almost never based on household data.[6]

The overall goal of this paper is to provide one of the first national household survey-based evaluations of the NCMS in the economics literature. The specific objectives include: (a) to attempt to describe the NCMS focusing mainly on the need for health insurance and the coverage and targeting of the program, and (b) to examine the participation of farmers in the program and try to assess some of the strength and weaknesses of the NCMS. We restrict our analysis to data which reflects the perspectives of farmers and clinicians.

II. Data

The data used in this paper are from the household survey led by the Centre for Chinese Agricultural Policy, Chinese Academy of Sciences, in collaboration with the University of California, Davis and the University of Toronto. The survey was conducted in early 2005 from a randomly selected, almost nationally representative sample of 101 rural villages in 5 provinces of China (Jiangsu, Hebei, Jilin, Sichuan and Shaanxi); 808 sample households were chosen randomly from these villages.

The survey form was designed to collect information on each individual's participation in the NCMS, health status and record in seeking medical attention. We asked whether NCMS was available in their villages and, if so, whether each household member participated or not. The respondents also provided information on coverage of the NCMS (the program's administrative details and rules and regulations) as well as on the reasons certain individuals did not participate in the program. The questionnaire included a special block that focused on collecting individual self-reported health information. In particular, each respondent was asked whether or not he/she became ill during the previous year and how (and if) he/she re-

sponded (by seeking outpatient, inpatient or no medical care). Information on all household expenditure on medical care was also solicited. The following are the results of the survey data analysis.

III. Farmers' Needs to Medical Insurance

1. There is a strong need for health insurance programs

In China' s post-reform rural economy, there is no doubt that many rural households could benefit from a high-quality and effective health insurance program. According to our data, approximately 75 percent of all sample individuals self-reported being ill during 2004; 25 percent self-reported being chronically ill (e.g. high blood pressure or back problems). About 15 percent of all sample individuals self-reported being seriously ill. Even though 91 percent of those who were ill sought some type of medical care, nine percent stated that they made a conscious decision not to seek medical care.

Our data also suggest that many individuals who self-reported having a serious illness cannot afford hospitalization. In our entire sample of 3,225 people, 316 individuals reported that they were seriously ill but did not stay in hospital. There were many reasons for not doing so. For example, seven percent said they lived too far from the hospital, five percent said when they sought medical care there were no beds available, and about 30 percent said their disease was incurable and decided against seeking any further treatment. Although financial constraints are part of the reasons in these categories, the great majority of those who did not seek medical care (56 percent) cited financial problems directly.

The inability of those with serious illnesses to afford medical care is a particular problem for those living in poor areas. While only 34 percent of those living in the richest 20 percent of the villages in the sample (that is, the richest quintile) stated that the reason for not being hospitalized was that they could not afford to pay for medical care, over half of those in the poorest quintile of villages did so. The seriousness of the problem is especially evident in the fact that significantly more than 20 percent of the individuals that did not stay as inpatients (71 of 316) came from the poorest 20 percent of the villages.

2. Still limited availability but relatively high level of participation in the new cooperative medical system

Although our data show that there is currently a great need for NCMS, as of the end of 2004 the program still had not spread very far and did not appear to be targeted very well. Only 24 of the 101 sample villages were covered by the NCMS in 2004. Of the 3,225 individuals that we surveyed, only 783 (or 24 percent of the sample) were living in villages covered by the system (henceforth called *covered individuals*). The level of coverage of our sample, in fact, is close to the national number. According to the National Statistics Bureau, by the end of 2004, 23 percent of individuals were covered by NCMS.[7]

Because of the voluntary nature of the program, however, coverage does not equal participation. Indeed, in our sample, of the 783 covered individuals, 617 (79 percent) participated. This number is again close to the officially stated national average of 75 percent.[8] Since "voluntary" programs in

China in the past were not always truly voluntary, we also asked each respondent if participation was their own decision. In fact, in almost all cases (93 percent) respondents told us that they made their own decision.

Coverage in the program was not only modest in the initial years of NCMS, it also arguably emerged first in those areas that needed it the least. For example, of the 24 villages that implemented the program in our sample, only 4 were from outside Jiangsu, our sample' s richest province. Only six percent of the sample individuals outside Jiangsu were covered by the end of 2004. More importantly, when we divide the sample villages between those covered by NCMS and those not, it can be seen that there are more sick people in the non-covered villages (76 vs. 73 percent) and non-covered villages have more individuals that are chronically (27 vs. 21 percent) and seriously (16 vs. 12 percent) ill. Based on this analysis, an argument can be made that NCMS is not well targeted: the rural areas that have received coverage earliest are those that least need it.

3. Reasons for decision not to participate

Although the participation rate is nearly 80 percent, there were still 166 covered individuals who decided not to be part of NCMS. We were interested in finding out in the face of high demand for rural health insurance why 21 percent of covered individuals decided not to participate. In particular, we wanted to know if non-participation was mainly due to program design problems or due to idiosyncratic factors of individuals (that is, personal factors).

In fact, our data show that personal factors account for 31 percent of cases in which covered individuals decided not to participate (eight percent did not think they would get sick, 18 percent were covered by other health insurance policies, and five percent did not believe the government would carry through with their promises).

Although there may be little the NCMS officials can do about these personal reasons, an even greater share of non-participants (46%) claimed they decided not to participate because they were displeased with certain design features of the NCMS. Above all, 23 percent of non-participants stated that as they were away from home most of the year working in urban areas as migrant workers and NCMS only reimbursed expenses in local hospitals and clinics, they decided it was not worth participating. In addition, 16 percent were not happy with the direct design of the local program (six percent said the reimbursement rate was too low; five percent said covered services were too expensive and five percent said the reimbursement procedures were too complicated). Interestingly, only seven percent of the individuals said the program was too expensive. Hence, our data suggest that fundamental design problems (the location of treatment and specific design features), instead of personal factors or price, were most responsible for discouraging participation.

IV. Situation on the Implementation of the NCMS

While it is possible to interpret the NCMS as being sufficiently successful in design and concept to attract most individuals in covered villages (though not targeting), it is difficult to provide a positive evaluation for the

implementation of the program in the sample villages during 2004. In this section we examine two key problems with the program. First, we explore how well individuals and clinicians in the covered villages understand the rules of the program. Second, we illustrate why the program's payout profile suggests that it will likely soon be facing a much less enthusiastic clientele.

Table 1 Perceptional differences among individuals, clinicians and published rules about scope of reimbursable medical expenses in the NCMS, 2004

	Published rules from the office in charge of NCMS (Panel A)		Responses by individuals in the sample (Panel B)		Responses by clinicians in the sample (Panel C)	
Scope of reimbursable medical expenses	Number reporting	Frequencies (percent)	Number reporting	Frequencies (percent)	Number reporting	Frequencies (percent)
Number of observations (individuals/clinicians/bureaus)	24	100	617	100	28	100
Only reimburses out-patient expenses	--	--	89	14	2	7
Only reimburses in-patient expenses	--	--	208	34	7	25
Reimburses for both out-patient and in-patient expenses	24	100	267	43	16	57
Did not know	--	--	53	9	3	11

Notes: a. Published Rules from the Office in Charge of NCMS is obtainable from local bureaus of health.
b. Since five villages had two clinics and one village did not have a clinic, the total number of reporting clinics in the villages with NCMS exceeded 24.
Source: Authors' data.

1. Misperceptions of covered services

One of the most fundamental problems is that there is a lot of misperception about the nature and scope of NCMS. This can be clearly seen when comparing responses among the program's stakeholders — farmers, clinicians and program officials — regarding one dimension of the design of the program: the coverage of services (Table 1). According to the official documents created and released by *all* the local NCMS offices at the county level and passed on to township officials and village leaders in our sample area, participants in NCMS are allowed to make claims for *both* "doctor visits" and "hospital stays" (Panel A). According to interviews with the county officials, there are no exceptions —doctor visits and/or hospital stays are covered under the program. However, according to our data, farmers do not understand this (Panel B). Only 43 percent of participating individuals in NCMS believe both doctor visits and hospital stays are covered. In contrast, 14 percent believe only expenses associated with doctor visits can be reimbursed; 34 percent believe only expenses with hospital stays can be reimbursed. Nine percent of individuals had

no idea of the services covered by the program. Hence, when comparing the perception of participants with those of the program literature, we see there is a wide gap in the understanding of the program.

Clinicians' understanding of the scope of the services covered by the program is not much better (assuming the official literature is correct —Panel C). Only 57 percent of clinicians understood both doctor' s visits and hospital stays were covered. The remaining clinicians believed either only doctor visits were covered (seven percent); or only hospital stays (25 percent); and 11 percent did not know. Interestingly, although in all cases the county NCMS office said that valid expenses incurred for doctor visits could be reimbursed (including visits to rural clinics), in many clinics we were told the actual situation varied from the theory. For example, clinicians in 17 out of 28 village clinics told us that expenses incurred on doctor visits could not be reimbursed for participating individuals. Moreover, clinicians in 11 out of 28 village clinics reported that the NCMS cannot be used at all by their patients.

So what is the conclusion and implication of these findings? Clearly, if there is really such a wide gap between the actual program parameters and the understanding of individuals and clinicians, a serious promotion effort is needed. Alternatively, it is possible that it is not promotion that is needed, but rather a more careful implementation because it could be that, in fact, individuals and clinicians are replying as they actually see the program being implemented. In other words, their perception of the program is actually different from the official literature on the design of the program, but the perceptions of individuals and clinicians may be an accurate representation of the way NCMS is being executed on-the-ground.

2. Effectiveness of the program and low payout rates

When examining the reasons why people afflicted with an illness that requires hospitalization decline to be hospitalized, we find a pattern of results that at first examination appears to show that participating individuals in covered villages are benefiting from the NCMS. We carry out this exercise by comparing both participating and non-participating individuals in covered villages and those in non-covered villages (Table 2). Our data show only 35 percent of participating individuals said that they did not seek necessary hospitalization due to financial difficulties. In contrast, 67 percent of non-participating individuals in covered villages and 60 percent of those in non-covered villages claimed they could not afford hospitalization. Hence, it would appear from such patterns that the NCMS is helping villagers overcome financial difficulties when facing the charges associated with hospitalization.

Closer examination, however, casts doubt on such an interpretation. First, although 67 percent of non-participants in covered areas claimed they could not afford to pay hospitalization charges, it should be remembered that non-participants were relatively young and often had fewer assets. Although the percentage is high, it is over a small base (only 9 individuals were in such a category). Therefore, it appears as if the story of non-participants is that they believe, and are correct in believing, that they are less in need of health insurance. However, as

seen, when they face high health costs, they are often not able to afford them and often choose to forgo them. In fact, it may be that usage of such coverage would not be high, but its benefit per usage may be high (since providing younger people with better human capital is likely to have relatively high social returns), and therefore programs should be developed to target the young and make it more attractive for them to participate.

Table 2 Reasons reported by farmers with serious illnesses for not seeking hospital care (when needed) in villages sorted by coverage categories, 2004 [a]

	Coverage category					
	Individuals in covered villages				Individuals in non-covered villages	
	Participating		Non-participating			
Stated reasons	Number of observations	Percent of total (%)	Number of observations	Percent of total (%)	Number of observations	Percent of total (%)
Total	49	100	9	100	258	100
Cannot afford financially	17	35	6	67	154	60
Lives too far from hospital	4	8	0	0	17	7
Hospital beds not available	9	18	1	11	6	2
Chronic illness is untreatable	17	35	2	22	75	29
Other	2	4	0	0	6	2

Note: a. Total number of individuals analyzed in this table is 316 (49 + 9 + 258).
Source: Authors' data.

Second, and most damning to the program, when examining the level of payout of NCMS, it is almost certain that the support from the program is ***not*** reducing the share of participating individuals that are not able to afford health care when needed. Table 3 shows the extremely low payout rates of NCMS during 2004. On average, participating individuals incurred 417 yuan of health expenditures, of which individuals financed 367 yuan (88.04%) out of current income (or savings). They borrowed from relatives for 6.13% and covered 2.41% by other means. In other words, nearly 97 percent of health expenditures of individuals that were participating in NCMS were covered by their own income, savings or borrowing. Only a bit over three percent was paid out by NCMS.

Such a low cost coverage by NCMS means, of course, that the expected payout for the average individual is low, only 14 yuan in 2004. In fact, if the single highest payout (2400 yuan) was excluded, the average expected payout was only 11 yuan. When compared to what farmers invested (on average 12 yuan per person —10 yuan in some

villages; 15 yuan in others), we see that the expected payout is negative (if we exclude the single outlier). In other words, when the average farmer pays out 12 yuan in a year, based on the experience of 2004, he/she should expect to receive back 11 yuan. Obviously, such a payout rate would not be unexpected in a non-subsidized commercially driven system. But as discussed above, NCMS is supposed to provide subsidized rural health insurance to farmers which should mean, on average, they make a positive amount on their investment. We believe if this low payout rate continues, individuals will soon catch on and show less enthusiasm for the program.

Table 3 Source of financing for expenditures on medical treatment in 2004

	Expenditures (yuan)	Percent of total	Standard deviation of expenditures	Minimum value of expenditures	Maximum value of expenditures
All individuals in sample who are covered by NCMS					
Total health expenditure (per capita) in 2004	417	100	1369	0	23500
Reimbursed by NCMS	14	3.42	113	0	2400
From current earnings or savings	367	88.04	1131	0	17500
Financed by borrowing (loan)	26	6.13	349	0	8000
Financed by selling off asset	0	0	0	0	0
Other source of financing[b]	10	2.41	242	0	6000
Covered in-patients by individuals in sample who sought in-patient care					
Total health expenditure (per capita) in 2004	3619	100	4310	80	23500
Reimbursed by NCMS	225	6	465	0	2400
From current earnings or savings	3027	84	3392	80	17500
Financed by borrowing (loan)	167	5	531	0	2000
Financed by selling off asset	0	0	0	0	0
Other source of financing[b]	200	6	1095	0	6000

Notes: a. Individuals in this section include all of those covered by NCMS, including a.) Those that were inpatients ("saw a doctor or clinician"); b.) Those that were outpatients ("went to hospital or township health centre"); c.) Those that were sick but did not seek medical treatment; d.) Those that were not sick; the number of observations is 617.
b. "Other Sources of Financing" includes a.) Financed by relatives b.) Reimbursed by other health insurance c.) etc.
Source: Authors' data.

The payout on hospitalization supports the findings on payouts in general. According to the information on NCMS provided by county officials, when individuals incur large expenses (e.g., when they need hospitalization), they should be able to be reimbursed for 30 percent of their total expenses. However, according to our data, on average the typical individual that is hospitalized is reimbursed for only six percent of his/her expenses. If we exclude the one large payout (of 2400 yuan), the average reimbursements for hospitalization equal four percent. Clearly, the program is not delivering on its promises.

From the examination of Table 3, it is clear that the NCMS is not behind the findings in Table 2. The average payouts are so low (about four percent, on average) that it is inconceivable that insurance reimbursements are allowing participating individuals in covered areas to seek hospital care when

they need it. Instead, it is likely due to the composition of those in covered areas. When comparing the incomes of participants in covered areas, non-participants in covered areas and individuals in non-covered areas, the participants are by far the wealthiest in terms of current earnings and assets (e.g. housing asset of 12,130 yuan per capita for participants; 8,400 yuan per capita for non-participants; and 6,881 yuan per capita for individuals living in non-covered areas). In other words, the correlation between participation and ability to seek hospitalization when needed is spurious. We do not believe NCMS plays a very important role.

V. Conclusion

In this study, we surveyed 808 rural households in China in 2004, a total of 3,225 individuals, to investigate the newly launched NCMS from the perspective of the farmer. We can conclude that there is a strong need in medical coverage in rural areas, especially low-income regions. The initial NCMS programs have attracted high level of participation in counties where they are available. The low personal contribution made possible by the government's subsidy of the premium appears to be an important factor.

However, the primary concerns we have are that the reimbursement rate is too low, the most-needed low-income regions are not covered by the program yet, and there exists a wide misunderstanding on the reimbursement policies by farmers and rural clinicians. It is necessary for the NCMS to improve the design and the actual implementation of the policy in order to keep farmers interested in the program and to meet its goal of providing rural residents, especially the poor, with adequate medical coverage.

One area where action is necessary is to provide an easy and understandable introduction to the nature of this NCMS and make clear the roles and responsibilities of all stakeholders involved: farmers, service providers, managers, etc.

The other specific design issue of the program is gap in services provided to migrants. Our results revealed that a high proportion of people who were not participating were not doing so due to the fact that they were working outside their villages. The implication of this is much more significant than health care itself. Future increases in rural household income and overall rural development necessitates the following shifts: shifting the labor force from agricultural to non-agricultural sectors and shifting the rural labor force to urban employment. Thus, providing essential medical services to such an increasingly large population is important. In the future improvement of the system, the above background needs to be taken into consideration.

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Labor Market Development and Its Gender Implications" (co-authored with Alan deBrauw and Scott Rozelle, *China Economic Review*, 2004, vol. 15, pp. 230-247).

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Notes

1. Schultz, T. P. and A. Tansel, "Measurement of Returns to Adult Health: Morbidity Effects on Wages in Cote d' Ivoire and Ghana," working paper No.95, Living Standards Measurement Study of World Bank, Washington, DC: World Bank, 1993.
2. Feng, X. S., S. L. Tang, G. Bloom, M. Segall and X. Y. Gu, "Cooperative Medical Schemes in Contemporary Rural China," *Social Science and Medicine*, 1995, vol. 41, pp. 1111-1185.
3. Du, Y., "Several Opinions on Rural Health System Reform," *Weisheng jingji yanjiu*, 2001, no. 1, pp. 4-6.
4. Yuan, C. and Z. Wang, "Treatment and Financial Loss of Catastrophic Diseases among Rural Farmers," *Yixue yu shehui*, 1998, no. 3, pp. 627-630.
5. Chen, J. S., "Design and Improvement of the Fund-raising System for the New Rural Cooperative Medical System," *Caijing kexue*, 2005, no. 1, pp. 124-131.
6. Hu, S. L. "Financing and Operational Status of the New Rural Cooperative Medical System in China," *Zhongguo weisheng jingji*, 2004, no. 9, pp. 24-25; Gu, X. and L. M. Fang, "Between Willingness and Coercion: An Analysis of Institutional Embedding and Development of Cooperative Medical Schemes in China' s Countryside," *Shehuixue yanjiu*, 2004, no. 5, pp. 1-18; Zhang, L. C., H. Wang, L. S. Wang, and W. C. Hsiao, "The Influence of Social Capital on Farmer' s Willingness-to-Pay to Participate in the New Rural Cooperative Medical System," *Zhongguo weisheng jingji*, 2004, no. 10, pp. 15-18.
7. National Statistics Bureau, "Monitoring Report on the Comprehensive Development of a ' Well-off Society' ," State Statistical Bureau Working Paper, Beijing, 2005.
8. Ministry of Health, "Reports on the Development of New Rural Cooperative Medical Scheme in 2004," News Brief on Rural Health No.18, Beijing: MOH, 2005.

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