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Heterogeneity of the effects of health insurance on household savings: Evidence from rural China

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Abstract:

This paper estimates the impact of the New Cooperative Medical Scheme (NCMS) on household savings across income quartiles in rural China. We use data from the China Health and Nutrition Survey for the 2006 wave and we run an ordinary least squares regression. We control for the endogeneity of NCMS participation by using an instrumental variable strategy. We find evidence that NCMS has a negative impact on savings of middle-income participants, while it does not affect the poorest households. The negative effect of NCMS on savings of middle-income participants holds when we use propensity score matching estimations as a robustness check.

Keywords: Rural China; New Cooperative Medical Scheme; Health Insurance; Chinese Savings and Consumption; Propensity Score Matching.

JEL Classification Numbers: C21, D1, I18, O53

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In the nineties, China experienced an average growth of GDP of 10%. The poverty headcount ratio[3] dropped from 84% of the population in 1990 to 64% in 1999. Life expectancy at birth increased from 69,4 years in 1990 to 71 years in 1999 (World Bank). During this decade, the Chinese government expanded health insurance coverage and launched the Urban Employee Basic Medical Insurance. However, access to healthcare remained difficult for rural and poorer households. In 2003, 22% of rural residents declared not seeking healthcare because they could not afford it compared to 15% of urban residents (Liu, Rao, Wu and Gakidou, 2008). Liu *et al.* (2008) pointed out that low-income households had a lower level of coverage compared to richer households and tended to avoid seeking medical care. The rising inequality in access to healthcare between urban and rural residents as well as between income groups led Chinese policy makers to examine this issue. Indeed access to healthcare is a key issue for economic development. Promoting health might decrease the poverty impact of medical expenses and create a virtuous circle by improving the population's health and enabling the poorest households to lift themselves out of poverty (Liu, Rao and Hsiao, 2003). This is why, from 1997 on, Chinese policy makers started various pilot programs. The year 2003 marked a turning point in healthcare reforms with the launch of the New Cooperative Medical Scheme (NCMS), which intended to cover rural residents. The first goal of the scheme was to facilitate the access to healthcare by relieving rural households of the burden of health expenditures. By this means, the government also intended to incentivise Chinese consumption and reduce high household precautionary savings that can be attributed to lower social safety nets according to Kraay (2000).

Cheung and Padieu (2013) investigate whether health insurance participation decreases the household saving rate and encourages consumption in rural China. They find that on average NCMS reduces the saving rate of rural households. The negative effect of health insurance on savings may, however, vary across income groups. A series of studies on Medicaid[4] demonstrates that this health insurance has a negative effect on the savings of eligible households (Hubbard, Skinner and Zeldes, 1995; Gruber and Yelowitz, 1999). Maynard and Qiu (2009) explore deeper the relation between Medicaid and savings and analyze it by income groups. They bring out that Medicaid reduces the saving rate of middle-income recipients but does not affect the saving rate of participants from other income groups. Similarly, we investigate whether NCMS negatively affects the savings of participants from all income groups or from particular groups only.

This article extends the scope of research on NCMS beyond health outcomes and contributes to the research on the effect of health insurance on precautionary savings in China. Former studies focus on macroeconomic aggregates due to a lack of data combining information on NCMS participation and household savings at a microeconomic level. We exploit the extensive data of the China Health and Nutrition Survey and construct household consumption expenses and savings.

In this paper, we study the heterogeneity of the impact of NCMS on household savings across income groups in rural China. We run an ordinary least-squares regression (OLS) to control for a set of socioeconomic, demographic and geographical determinants of savings.

[3] The poverty headcount ratio refers to the percentage of the population living on less than $2 a day at 2005 international prices.

[4] Medicaid is a health insurance, which covers poor and vulnerable households in the US.

We also control for potential adverse selection with an instrumental variable regression (IV) as NCMS participation is voluntary. We find evidence of a negative impact of NCMS on household savings for the lower-middle-income group in both OLS and IV regressions. These results are robust to propensity score matching estimations (PSM).

The paper is organised as follows: section 1 gives a brief presentation of the introduction of NCMS; section 2 describes the data; section 3 covers the empirical strategy and presents the results; section 4 tests the robustness of our results using propensity score matching methods; and section 5 discusses the results and concludes.

I. Introduction of the New Cooperative Medical Scheme

The dismantling of the People's Communes associated with China's move towards a social market economy led to the collapse of the traditional healthcare system (Liu, 2004). The central government encouraged the autonomy of public hospitals and allowed the number of private practitioners and private clinics to grow in order to address the lack of medical institutions and professionals. Medical expenses of rural citizens skyrocketed. From 1980 to 1988, the share of health expenses paid by Chinese households increased from 16% to 38%, up to 61% in 2001 (Zhang and Kanbur, 2003). The increase in health expenditures had two major consequences. First Chinese households tended to save more in order to cover themselves from potential catastrophic health expenditures (Chamon and Prasad, 2008). Second the number of rural households living below the poverty line rose by 44.3% between 1993 and 1998. (Liu, Rao, and Hsiao, 2003). Providing health insurance is essential to fight poverty. As a consequence, the government decided to launch a new health insurance program to improve access to healthcare in rural areas but also to lower household precautionary savings.

The NCMS was inaugurated in 2003 and was designed to cover the whole country by 2010. The central government decided to assist local governments in poor regions, namely the central and western regions. They did not participate in the funding of the richer eastern regions. The NCMS was initiated in 162 out of more than 2400 counties in the first year, and expanded to 333 counties by 2004. The NCMS is a voluntary scheme and primarily aims at covering catastrophic expenditures. In 2003, the central and local governments both contributed 10 yuan per person annually, while households paid 10 yuan to participate. In 2008, these amounts increased to 40 yuan and 20 yuan respectively[5] (Dong, 2009). These contributions fund an individual account as well as a pooling account meant to partially cover the cost of hospitalization and outpatient expenses for severe diseases. The scheme is organized at the county level: each county is free to implement the scheme at its discretion. Local governments decide reimbursement ratios, deductible ceilings and provider payment methods. As a result, the organization of the program, its impact on health expenditures, and vulnerability to health shocks vary across counties. However, we have to keep in mind that the main goal of NCMS is to cover households from catastrophic expenditures and to relieve their financial burden of healthcare consumption, whatever the features of the program. This is why, despite this heterogeneity, we evaluate the overall effect of NCMS on household savings across income quartile.

[5] See Dong (2009) for further details on premiums or reimbursement ratios.

II. Data and descriptive statistics

Variables

We use data from the China Health and Nutrition Survey (CHNS). The CHNS is jointly conducted by the Carolina Population Centre at the University of North Carolina at Chapel Hill and the National Institute of Nutrition and Food Safety at the Chinese Centre for Disease Control and Prevention in Beijing. This survey was designed using a multistage random cluster process and covers nine provinces from 1989 to 2009. The CHNS provides information on socioeconomic and demographic characteristics at the community, household and individual levels. Focusing on health and nutrition outcomes as well as individual and household expenses, the overall survey collects information on approximately 4,400 rural and urban households (or some 19,900 individuals) for 8 waves.

In this paper, we use one round of the CHNS: the 2006 wave, i.e. three years after the implementation of the NCMS. The sample includes only counties where NCMS was introduced. We focus on households living in rural China, who answered to questions on both expenses and health sections, which reduces our sample to 1312 households. In 2006, 71.1% of these households (933) decided to join NCMS (see Table A2 in appendix).

The key dependent variable is the total amount of household savings. It is constructed as the difference between household total net income and total consumption expenses on durables and non-durables. Household total net income is the sum of wages, net revenues from production and entrepreneurship, net subsidies, cash received as gifts as well as income from rent and non-household members. This last source of income includes remittances. The CHNS provides a detailed section on household consumption, which gathers spending on high tech items, electrical appliances, healthcare, wedding, dowry, as well as gifts or cash offered to non-household family members. However, we do not have any information on food consumption expenses. The contribution of the paper lies in the construction of this missing information. We build food consumption expenditures based on the quantities of products consumed and their germane prices which are given by the CHNS. We add this category of expenditures to the other disaggregated ones available in the survey to obtain total consumption expenses. The construction and measurement of all consumption expenses are detailed in Appendix A.

Another key variable is the household enrolment in NCMS. We use several health, demographic, and socioeconomic variables in order to control for household characteristics. Health variables include: a dummy variable referring to the presence of at least one ill member in the household in the last four weeks preceding the interview, the percentage of ill members in the household in the last four weeks preceding the interview, the availability of medication at the nearest health care institution, the travel time by bike to reach a health care institution, as well as the enrolment in the former health insurance system, the Cooperative Medical Insurance, in 2000. Demographic and socioeconomic variables consist of: household size, age, gender and education of the head of household, whether one of the household members is a farmer, the number of households living in the community and income quartiles. We also create a dummy referring to whether the household lives in one of the five richest provinces of our sample (Liaoning, Shandong, Jiangsu, Hunan, and Hubei).

Baseline descriptive statistics of the sample

In 2006, 64% of the households of our sample were exposed to NCMS. 73% (331 households) of poorest household decided to join NCMS (see Table A1 in appendix). The participation rates were 72% for the second income quartile, 73% for the third quartile and 66% for the fourth quartile.

Tables B, C, D and E in the appendix report descriptive statistics of the dependent and independent variables. On average, participating and non-participating households are of the same size and have the same access to medication. As the scheme is meant to target farmers, not surprisingly, households with at least one farmer are more inclined to enrol. Households, who used to join the old Cooperative Medical Scheme in 2000, are more likely to participate. Non-enrolled households tend to have an older and non-working head. On average, households whose head is a woman also tend to participate less in the scheme, except for the second income quartile. Globally, participants live in richer provinces and have heads that hold a higher or professional degree, except for the richest households. Participants also have easier access to medical infrastructures as the travel time by bike to reach the nearest healthcare institution is on average lower. It is worth to point out that poorer households –from the first and second quartiles- tend to participate in the scheme when they do not have ill members in the family, while richer households –from the third and fourth quartiles- enrol regardless.

Descriptive statistics show that participants of the second, third and fourth quartiles save less than non-participants, while participants from the first quartile save more. In 2006, households from the first and second quartiles overspent on average, while households from the third and fourth quartiles did not. On average, participants of the first quartile spent the same amount as non-participants, but their net income was 15% higher. As a consequence, they had a smaller depletion in savings, -4992 and -4361, respectively. Lower-middle-income participants spent on average 25% more than non-participants from the same quartile, 15380 yuan versus 11610 yuan. They earned less on average and thus saved less than non-participants, -3986 yuan and -59 yuan. The same observation holds for upper-middle income households: participants from this income quartile saved less. At last, among the richest households, we observe that non-participants earned more on average (+7%), spent much more (+23%), and saved less (-4.5%) compared to participants from the same income group.

III. Empirical strategy and issues

Empirical model

We use the following standard linear regression to estimate the impact of NCMS on household savings by income quartile:

$$Y_{h,i} = \alpha_{1,i} + \beta_{1,i}.NCMS_{h,i} + \beta_{2,i}.X_{h,i} + \varepsilon_{h,i} \qquad (1)$$

$Y_{h,i}$ is the total amount of savings of household h from quartile i (i takes values from 1 to 4). $X_{h,i}$ is a set of control variables at the household and community levels for quartile i, $\alpha_{1,i}$,

the constant, and $\varepsilon_{h,i}$, the error term which controls for unobservables affecting the outcome of interest. $NCMS_{h,i}$ denotes the participation of the observed household in the scheme[6].

$X_{h,i}$ refers to demographic and socioeconomic variables for a specific quartile: household income, gender and age and age of square of the head of household, whether the household size is greater than the average of the sample, whether the latter has completed at least upper-middle school or a professional degree, whether the head of household works, and also whether one member of the household is a farmer. We also add provincial dummies in the regression and omit the richest province of our sample as the baseline group.

One major concern with eq.1 is the endogenous participation in NCMS. As enrolment to NCMS is voluntary, participating households may have specific characteristics that could bias the estimates. As shown by Wagstaff *et al.* in 2007, enrolment is higher among households with chronically sick members. These households may have specific saving behaviours. If we do not control for the potential adverse selection problem, it could bias the estimates and subsequently distort the magnitude of the impact of NCMS on savings and consumption expenditures.

In order to control for the endogeneity of participation in the scheme, we adopt an instrumental variable strategy using the same set of control variables as in eq. (1). We first predict NCMS participation, $\widehat{NCMS}_{h,i}$, according to the instrument, and then include it in eq. (1). We instrument the enrolment to NCMS with the percentage of enrolled households in the community, excluding the observed household. We assume that, the higher the coverage in the community, the more credible and attractive the insurance is to households. This community-level variable is correlated with household participation in NCMS but does not affect household consumption and savings. The instrument is a good predictor of NCMS participation: the correlation between enrolment in NCMS and the instrument is positive with a first-stage t-statistic on the instrument equal to 10.93 for the first quartile, 11.86 for the second quartile, 14.19 for the third quartile, and 14.13 for the last quartile.

Results

The results for OLS and IV regressions are reported in Tables 1 and 2. OLS regressions show that lower-middle-income participants deplete their savings significantly and symmetrically increase their consumption expenses compared to non-participants households. The IV regressions confirm this result with a magnitude of impact coefficient that is one tenth higher than the OLS coefficient and lower than the average income of this quartile. According to OLS estimations, NCMS participants tend to decrease their savings by 8,872 yuan, while the IV estimations show a reduction of their savings of 10,107 yuan.

When we instrument household participation in NCMS, we observe that upper-middle-income participants tend to increase their total consumption expenses and reduce their savings compared to non-participant households from the same quartile. The magnitude of IV coefficient is high for the third quartile. The coefficient is fifty percent greater than the average of household income from this quartile. This difference suggests a decrease in savings fuelled by a reduction of household patrimony.

[6] All our variables are expressed for the year 2006, which is three years after the introduction of NCMS.

In a nutshell, the OLS results confirm the trend observed in the descriptive statistics: lower-middle-income participants save less than non-participants. This result holds with IV estimations. Moreover, IV estimations show that upper-middle-income participants decrease their savings as suggested in the descriptive statistics. We do not, however, find any negative impact of NCMS on household savings for the fourth quartile as it was suggested by the descriptive statistics.

TABLE 1. OLS adjusted regression results of savings on NCMS by income quartile.

VARIABLES	Quartile 1 Savings	Quartile 2 Savings	Quartile 3 Savings	Quartile 4 Savings
NCMS participation	-597.1	-8,991**	-7,037	1,587
	(2,802)	(3,521)	(4,378)	(3,471)
Control Variables	Yes	Yes	Yes	Yes
Constant	15,250	29,220	-3,156	4,900
	(11,497)	(25,857)	(42,809)	(26,507)
Observations	265	263	293	340
R-squared	0.196	0.142	0.084	0.548

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

TABLE 2. IV adjusted regression results of savings on NCMS by income quartile.

VARIABLES	Quartile 1 Savings	Quartile 2 Savings	Quartile 3 Savings	Quartile 4 Savings
NCMS participation	-7,832	-9,452*	-27,794***	308.8
	(4,866)	(5,644)	(10,458)	(8,634)
Control Variables	Yes	Yes	Yes	Yes
Constant	23,706*	29,477	25,265	6,282
	(13,241)	(23,694)	(44,777)	(26,236)
Observations	265	263	293	340
R-squared	0.139	0.142	-0.000	0.547
Kleibergen-Paap Wald F statistic	43.49	154.4	171.1	146.6
C statistic- Chi sq p-value	0.07	0.94	0.01	0.84

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

We provide detailed tables of OLS and IV regressions in the appendix (see Tables F-M). We observe that results are robust when we progressively control for demographic and socio-economic variables (Regressions 2 and 3) and then for provincial dummies (Regression 4).

Robustness checks

As household income is reported for one year, it might not reflect the true wealth status of the household. Indeed, some households considered as poor in 2006 may have suffered from a transitory decrease of their income during this year. The same logic applies for the

fourth quartile. Some households from the richest quartile may have got temporarily richer in 2006.

To avoid any bias due to the definition of income quartiles, we check the reliability of the NCMS impact by changing our definition of poorest and richest households. We exclude from the first quartile all households with a head who completed an upper-middle school, vocational or college degree. We remove from the fourth quartile all households with a head without education or which did not go further than the lower-middle school.

We run OLS and IV regressions for these new categories of households. We use the same set of independent variables and add education dummies. For the new category of the poorest, we control for three education variables: households with a head that completed lower middle school, households with a head that completed primary school, and households, the head of which has no education. For the new category of the richest, we control for three dummies: households with a head that has a university or college diploma, households with a head that has technical degree and household with a head that completed upper-middle school.

For both new categories, the results remain consistent with the previous impacts as NCMS participants from the first and fourth quartiles do not significantly change their saving behaviours (see Appendix, Tables N and O for the impact coefficient of NCMS on savings).

Moreover, in order to ensure that our results can be attributed to NCMS and not to other cross public programs, we also run the OLS and IV regressions on a sample excluding the households who benefit from other types of insurance such as: the Free Medical Insurance, Health Insurance for Women and Children, and the Immunisation Program for Children. These insurances provide either free healthcare or benefits that may affect household consumption and savings. Tables P to S in the appendix report the estimated coefficients. The signs and significance remain unchanged for both definitions of quartiles. The magnitude of the OLS and IV significant coefficients are close to the initial results.

IV. Using another estimation framework: Propensity Score Matching

Propensity Score Matching

In order to check whether our findings with OLS and IV are robust, we control for the endogenous take-up of NCMS using propensity score matching (PSM).

PSM enables empirical ex-post policy evaluation by creating a counterfactual and addressing the household adverse selection problem. Treated individuals covered by NCMS and non-treated individuals might have personal characteristics that both affect the decision to participate in NCMS and the outcome of interest in our project: household savings. PSM balances the observable characteristics of individuals of both groups and matches them according to their probability to enrol. We thus assume that there is no difference between both groups in terms of unobservables (Rosenbaum and Rubin, 1983). To compare levels of consumption and saving between participants and non-participants, we first predict the probability of participation in the scheme using a probit regression:

$$NCMS_{h,i} = \alpha_{2,i} + \delta_i . Z_{h,i} + \varphi_{h,i} \qquad (2)$$

$NCMS_{h,i}$ is the household participation in NCMS for each quartile of income i, i takes the values 1, 2, 3 and 4; $\alpha_{2,i}$, is a set of controls, and $\varphi_{h,i}$ is the error term.

The set of controls includes the same demographic, socioeconomic, and geographic variables than in OLS and IV estimations. However, as we are predicting the probability of participation in NCMS, we also add controls for health characteristics and healthcare supply such as: the maximum average waiting time in healthcare institutions of the community, the presence of at least one ill member in the household during the past four weeks, and the enrolment to the old Cooperative Medical Scheme Insurance in 2000,

Using the propensity score function obtained from the probit, we measure the average treatment effect of the treated (ATT) for the 2006 wave:

$$ATT = E\left[Y_{2006}^{participants}(Z)\right] - E\left[Y_{2006}^{non-participants}(Z)\right] \qquad (3)$$

$Y_{2006}^{participants}$ and $Y_{2006}^{non-participants}$ refer to the amount of savings and total consumption expenditures in 2006 for participants and non-participants, respectively. The term "Z" refers to observable variables controlled in the probit. The Stata command "psmatch2" developed by Leuven and Sianesi (2010) is used to pair off households according to the set of causal variables, "Z". We use three matching methods: *one-to-one*, *k-nearest neighbours* and *kernel matching* with bootstrap replications to get adjusted standard errors. We only match participant and non-participant households who belong to the common support.

Results

Results of the probit regression for each quartile are reported in Table 3[7]. We observe a great disparity in the determinants of NCMS take-up across the different income groups.

Only one independent variable seems to influence the participation in the scheme for almost all income quartiles: households with at least one farmer are more likely to enrol.

Regarding health variables, having at least one sick member in the household has a positive significant impact on the participation decision of the richest households, but not of the poorest. A longer average waiting time at the nearest institution disincentives the participation of the richest households.

Finally, regarding demographic data, the age of the head of household is a determinant for NCMS take-up for the fourth quartile: the older the head of household, the less likely he is to enrol his family. For the second quartile, a woman is more likely to enrol her family when she is the head of household. Middle-income households whose head completed at least upper-middle school or professional degree are more likely to participate in NCMS. Richer households with a non-working head tend to participate less.

[7] All the variables are expressed at the household level or at the community level. All variables (except the number of households in the community and the geographical location of households) were constructed from individual variables provided by the CHNS.

TABLE 3. Determinants of enrolment in NCMS for each income quartile

VARIABLES	Quartile1 Enrolment	Quartile 2 Enrolment	Quartile3 Enrolment	Quartile 4 Enrolment
Age of head of household (hh)	-0.0224	-0.0232	-0.0252	-0.0407*
	(0.0231)	(0.0238)	(0.0252)	(0.0228)
Age squared of head of hh	0.000155	0.000243	0.000300	0.000407*
	(0.000196)	(0.000219)	(0.000229)	(0.000214)
Gender of head of hh	-0.0652	0.227***	-0.137	-0.0751
	(0.0890)	(0.0428)	(0.118)	(0.118)
Household size greater than sample average	-0.00984	0.00758	0.00808	0.0746
	(0.0773)	(0.0630)	(0.0669)	(0.0616)
Head of hh holds at least an upper middle school or professional degree	0.0920	0.203***	0.129**	-0.0359
	(0.102)	(0.0463)	(0.0627)	(0.0721)
At least one farmer in hh	0.193*	0.242**	0.115	0.215***
	(0.110)	(0.0955)	(0.0786)	(0.0626)
Head of hh does not work	0.0985	-0.0496	-0.314***	-0.175*
	(0.0925)	(0.101)	(0.120)	(0.0989)
Household net income	1.94e-05	-1.26e-05	-1.50e-05*	1.20e-07
	(1.46e-05)	(1.33e-05)	(8.96e-06)	(8.89e-07)
CMS insurance in 2000		0.0928	0.129	0.0947
		(0.0905)	(0.0829)	(0.0725)
At least one member of hh is ill	-0.0742	-0.0487	0.148**	0.220***
	(0.0719)	(0.0672)	(0.0624)	(0.0578)
Maximum average waiting time	-0.00275	-0.00250	-0.00237	-0.00706***
	(0.00286)	(0.00186)	(0.00209)	(0.00170)
Provincial dummies	Yes	Yes	Yes	Yes
Observations	227	244	250	321

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4 reports estimates of average treatment effect of the treated (ATT) at the household level, using the following three matching methods: *one-to-one* with narrowing calliper equal to 0.5, 0.01 and 0.005, *k-nearest neighbour* with 7, 5 and 2 neighbours and *kernel* without calliper and narrowing calliper equal to 0.5 and 0.01. The use of different methods and narrowing callipers allows us to check the robustness of our results.

We find a statistically significant impact of NCMS take-up on household consumption and savings for the lower-middle-income group, which confirms our findings with the OLS and IV estimations. Participating households deplete their savings by 7050 yuan on average[8] compared to non-participant households. PSM estimates like the IV estimates suggest that there might be a negative impact of NCMS on the savings of upper-middle income household as well. We find a significant negative impact for half of the estimates, the other half remain non-significant. We do not find any significant impact of NCMS for the poorest and the richest households.

Robustness checks

PSM assigns to each control observation a weight that indicates the frequency of matching. We want to make sure that our results are not biased by a frequent use of one non-participant household as a matched control. We follow the first step of correction suggested by Huber, Lechner and Wunsch (2009) and we "set all weights to zero if the share of the sum of all weights is larger than t%". In this paper, we use a threshold of 4% which is the lowest threshold proposed by Huber *et al.* (2009). As all the controls are selected for the matching process -and not only the closest controls- in the *kernel* matching method, we implement this rule for the first two matching methods only, *one-to-one* and *k-nearest neighbours*. When we remove all observations satisfying the rule, the significance of the impacts is still consistent with the previous results[9].

Similarly to the OLS and IV estimations, we test our results with second definition of poorest and richest households. We exclude from the first quartile all households with a head who completed an upper-middle school, vocational or college degree. We remove from the fourth quartile all households with a head without education or which did not go further than the lower-middle school. The impact of NCMS on savings remains insignificant for these two groups of individuals (see Table T in appendix).

Finally, the results hold when we exclude households having other insurances (see Table U in appendix).

[8] We compute the average of all significant estimates.

[9] The results of the PSM estimates after following the rule of Huber and al. (2009) are available upon requests.

TABLE 5. Average treatment effect of NCMS participation on Savings (in yuan), for *one-to-one, k-nearest neighbour*, and *kernel* matching methods (bootstrapped standard errors).

		One to One						K-nearest neighbour						Kernel					
		calliper 0.5		calliper 0.01		calliper 0.005		neighbour=7		neighbour=5		neighbour=2		no bandwidth		bandwidth=0,05		bandwidth=0,01	
	N	ATT	*p-val*	ATT	*p-val*	ATT	*p-val*	ATT	*p-val*	ATT	*p-val*	ATT	*p-val*	ATT	*p-val*	ATT	*p-val*	ATT	*p-val*
Quartile1	**227**	1,282.291	0.867	3890.917	0.569	7720.233	0.379	4933.711	0.489	5012.909	0.493	5960.588	0.437	5258.983	0.482	5110.989	0.495	3795.918	0.581
Quartile2	**244**	**-6,825.705**	**0.023**	**-8,496.345**	**0.023**	-7,856.087	0.134	**-6,609.095**	**0.025**	**-6,061.423**	**0.047**	**-6,710.468**	**0.030**	**-6535.441**	**0.025**	**-6512.928**	**0.027**	**-8651.851**	**0.017**
Quartile3	**250**	-3329.045	0.382	-5,290.192	0.290	-5,558.937	0.411	**-5614.18**	**0.061**	**-5812.305**	**0.060**	-4879.666	0.178	**-5717.571**	**0.062**	**-5595.753**	**0.071**	-6500.385	0.166
Quartile4	**321**	-128.7166	0.981	-68.91463	0.992	-1,596.104	0.828	-736.7742	0.889	-207.4178	0.969	430.4706	0.938	-834.0071	0.868	-1065.233	0.832	592.397	0.926

V. Discussion

This paper estimates the impact of the New Cooperative Medical Scheme on household savings by income quartile in rural China. We use the China Health and Nutrition Survey for the 2006 wave and run three different types of regressions. First, we implement an ordinary least squares regression to control for a set of socioeconomic, demographic and geographical variables. Second, we use an instrumental variable strategy to deal with the endogeneity of NCMS participation. Finally, we check the robustness of the former results with a propensity score matching using enrolled households as the treatment group and non-enrolled households as the control group. The three estimation strategies show that lower-middle-income participants save less than non-participants, while households from other quartiles are not affected by the scheme. Moreover, we observe a negative impact of NCMS participation on savings for upper-middle-income households with IV estimations, which is partly confirmed by PSM. We discuss the impact of NCMS by income quartile using PSM results which corroborate OLS and IV estimations.

Only lower-middle-income households are significantly affected by the scheme. After enrolling NCMS, households from the second quartile are less likely to save. This result is confirmed by the OLS, IV and PSM estimations with coefficients varying from -7000 yuan to -9800 yuan a year. This finding is encouraging as it shows that NCMS decreases the income risk of lower-middle-income participants and allows them to lower their precautionary savings and increase their consumption. PSM and IV estimates also suggest that NCMS might have a negative impact on the savings of upper-middle-income household. However, the poorest households do not significantly change their consumption and savings behaviours, suggesting that NCMS does not reduce their income risk enough to make them consume more and save less.

Richer enrolled households are not affected by the scheme. This result could be explained by the fact that these households can afford healthcare even without participating in NCMS. Some of these richer households have alternative health insurances: 35% of these households have another insurance indicating that they are already covered against health risk. These insurances allow households to consume healthcare even if they do not participate in NCMS, reducing the impact of NCMS on participants' savings.

To conclude, NCMS does have an impact on lower-middle-income participants. The healthcare scheme reduces their income risk of participants and enables them to access more consumer goods. The savings of the poorest households are not affected by the scheme, perhaps implying that they are trapped in poverty. Further research could be done to understand the mechanisms at work in this poverty trap in order to improve the situation of the poorest households. The findings of this paper demonstrate the relevance of the implementation of specific schemes, which target the needs of the poorest households, such as the Medical Financial Assistance[10].

Despite the robustness of our results, we are vigilant about the generalization of the

[10] The Medical Financial Assistance is a health care scheme targeting poor households in urban and rural areas. It was implemented in 2005 as a pilot program in rural areas It finances household contribution of NCMS for poor and other eligible households and provides complementary coverage of health expenses as well as medical assistance.

impact of NCMS on household savings for three reasons. First, we assess the impact of NCMS on household savings by comparing voluntary participants to non-participants. We exclude counties where NCMS was not introduced because of the possible endogeneity of NCMS implementation. We are concerned that NCMS might have been first introduced in richer counties with better health infrastructures. Second, we evaluate a short-term impact as our study takes place three years after the introduction of NCMS. Third, we are cautious of the inference of the magnitude of the impact of NCMS on household saving behaviours. The magnitude of the impact might vary with different designs of the scheme. We control for this heterogeneity by using geographical variables, though some uncontrolled variation might remain.

One extension of the paper would be to focus on the credibility of NCMS. In a previous paper, we show that the impact of NCMS on household savings is not immediate: it takes two years to modify the saving behaviours of the households and the magnitude of the impact decreases over time. Unfortunately, we do not have enough observations to replicate this work by income quartile.

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APPENDIX

Appendix A. Measurement of consumption expenses.

We obtain total consumption expenditures by summing spending on food consumption, electrical appliances, high tech items, healthcare, wedding, dowry and gifts or cash offered to non-household family members.

We compute food consumption expenditures by combining data from the Nutrition and the Community Surveys. The Nutrition Survey lists the food items and quantities consumed by each individual or each household during three days. Consumed quantities of food are declared both by the individual and the surveyor. This latter carries out an inventory of all food items to be found in the household; s/he weights them every morning and every evening. Quantities of food consumed away, however, are declared by the individual only. The Community Survey gives prices of an exhaustive list of food items per community for each wave. The food items are gathered in ten categories: food grains, cooking oil, vegetables and fruits, meat and poultry, fresh milk, preserved milk, fish, bean curd, fuel (which we do not include), and a last category entitled "other products" which includes cigarettes, alcohol and drinks. These prices are declared by the head of the community or by the germane storekeeper. We have free market and supermarket prices and we also know where the residents of a community go most often to buy a product (free market or supermarket). We cross the price and quantity of each food item consumed to get food consumption expenditures for three days. We work out the daily average food consumption expenditures that we multiply by 365 to obtain food consumption expenditures for the year.

The "high tech items" category includes fives goods: computer, phone, mobile phone, DVD/VCD player and satellite dish. The expenses for each of these products are calculated with the following information: number of owned items, estimated value of all these items, number of items purchased in the last 12 months. We generate the price of one unit of item by dividing the estimated value of the stock by the number of owned items. We allocate this price to the items purchased in the year.

Health expenditures are obtained by adding up all the expenses declared by the individual in the four weeks preceding the interview. These expenses gather all the costs related to a treatment for a disease or an injury that occurred in the last 4 weeks, no matter the medical procedure (consultation, hospitalization), nor the type of institution visited (health clinic, hospital, family planning). All the charges are included in the computation of healthcare expenditures and reimbursements of health insurance are already deduced from these charges.

All other expenditures are declared by the individual for the year.

All prices are preliminary inflated to the 2006 prices to take into account inflation.

Appendix B. Tables

TABLE A. Descriptive statistics of NCMS introduction and participation by income groups

Table A1. Distributions of NCMS introduction and NCMS participation in the scheme by income groups

	Sample number of observation	NCMS counties		
		All	Participants	Non-participants
	2006	2006	2006	2006
Quartile 1	515	332	243	89
Quartile 2	516	297	215	82
Quartile 3	516	323	236	87
Quartile 4	516	361	240	121

Source: CHNS, Authors' calculations

Table A2. Shares of NCMS introduction and NCMS participation in the scheme by income groups (in %)

	NCMS counties		
	All	Participants	Non-participants
	2006	2006	2006
Quartile 1	64	73	27
Quartile 2	58	72	28
Quartile 3	63	73	27
Quartile 4	70	66	34

Source: CHNS, Authors' calculations

TABLE B. Sample characteristics in 2006, first quartile of income

	Non NCMS counties		NCMS counties					
			All		Participant		Non-participant	
	mean	sd	mean	sd	mean	sd	mean	sd
Dependent								
Household (hh) net income	4615.62	2234.414	4666.45	2191.996	4838.65	2113.968	4198.20	2340.147
Hh consumption expenses	15076.69	26935.325	9197.67	10888.438	9200.29	9691.870	9190.56	13687.447
Hh level of saving	-10461.08	27315.439	-4531.22	10865.401	-4361.63	9845.007	-4992.36	13303.359
Explanatory variables Socioeconomic and demographic								
Age of head of hh	55.53	12.312	56.87	12.241	56.22	12.066	58.64	12.602
Age squared of head of hh	3234.35	1382.126	3383.89	1420.071	3305.66	1376.249	3595.72	1520.386
Gender of head of hh	0.14	0.347	0.15	0.358	0.13	0.332	0.22	0.414
Hh size greater than sample average	0.51	0.501	0.39	0.488	0.38	0.485	0.42	0.496
The hh holds at least an upper-middle school degree	0.04	0.205	0.06	0.233	0.07	0.249	0.03	0.181
At least one farmer in hh	0.67	0.473	0.70	0.460	0.73	0.446	0.62	0.489
Head of hh does not work	0.38	0.487	0.45	0.498	0.43	0.496	0.51	0.503
CMS insurance in 2000	0.00	0.000	0.08	0.265	0.10	0.300	0.01	0.106
Health								
At least one member of hh is ill	0.29	0.455	0.27	0.443	0.24	0.431	0.33	0.471
Maximum average waiting time	8.89	14.578	8.27	11.595	7.51	10.813	10.31	13.344
Geographic								
Liaoning	0.03	0.163	0.12	0.323	0.13	0.339	0.08	0.271
Heilongjiang	0.12	0.326	0.12	0.323	0.14	0.348	0.06	0.232
Jiangsu	0.00	0.000	0.16	0.367	0.19	0.393	0.08	0.271
Shandong	0.04	0.192	0.11	0.312	0.14	0.352	0.01	0.106
Henan	0.26	0.438	0.03	0.171	0.04	0.199	0.00	0.000
Hubei	0.03	0.179	0.13	0.340	0.12	0.330	0.16	0.366
Hunan	0.17	0.376	0.03	0.180	0.03	0.179	0.03	0.181
Guangxi	0.08	0.275	0.14	0.350	0.07	0.256	0.34	0.475
Guizhou	0.27	0.447	0.16	0.364	0.12	0.330	0.25	0.434
Sample size	183		331		242		89	

TABLE C. Sample characteristics in 2006, second quartile of income

	Non NCMS counties		NCMS counties					
			All		Participant		Non-participant	
	mean	sd	mean	sd	mean	sd	mean	sd
Dependent								
Household (hh) net income	11141.32	2121.698	11436.79	2166.869	11393.28	2195.261	11550.85	2099.493
Hh consumption expenses	15360.06	20464.732	14338.14	21156.938	15378.85	23201.840	11609.44	14250.532
Hh level of saving	-4218.74	20549.074	-2901.35	21212.800	-3985.57	23262.045	-58.59	14263.509
Explanatory variables Socioeconomic and demographic								
Age of head of hh	54.31	12.146	54.21	10.888	54.27	10.868	54.02	11.007
Age squared of head of hh	3096.49	1360.675	3056.38	1218.711	3063.27	1218.995	3038.32	1225.280
Gender of head of hh	0.10	0.300	0.11	0.313	0.13	0.339	0.05	0.226
Hh size greater than sample average	0.55	0.498	0.49	0.501	0.49	0.501	0.49	0.503
The hh holds at least an upper-middle school degree	0.15	0.354	0.11	0.319	0.13	0.337	0.07	0.262
At least one farmer in hh	0.64	0.480	0.71	0.453	0.75	0.432	0.61	0.491
Head of hh does not work	0.34	0.476	0.32	0.466	0.30	0.460	0.35	0.481
CMS insurance in 2000	0.01	0.095	0.09	0.293	0.12	0.321	0.04	0.189
Health								
At least one member of hh is ill	0.26	0.440	0.26	0.437	0.24	0.426	0.30	0.463
Maximum average waiting time	10.68	13.277	8.86	14.255	7.60	12.317	12.53	18.402
Geographic								
Liaoning	0.02	0.150	0.11	0.319	0.11	0.310	0.13	0.343
Heilongjiang	0.12	0.330	0.09	0.288	0.10	0.298	0.07	0.262
Jiangsu	0.00	0.000	0.18	0.384	0.18	0.382	0.18	0.389
Shandong	0.08	0.268	0.10	0.302	0.13	0.337	0.02	0.155
Henan	0.22	0.415	0.02	0.141	0.03	0.165	0.00	0.000
Hubei	0.13	0.340	0.15	0.362	0.19	0.390	0.07	0.262
Hunan	0.18	0.387	0.02	0.152	0.02	0.135	0.04	0.189
Guangxi	0.10	0.295	0.18	0.384	0.12	0.321	0.34	0.477
Guizhou	0.15	0.354	0.14	0.346	0.14	0.347	0.13	0.343
Sample size	219		297		215		82	

TABLE D. Sample characteristics in 2006, third quartile of income

	Non NCMS counties		NCMS counties					
			All		Participant		Non-participant	
	mean	sd	mean	sd	mean	sd	mean	sd
Dependent								
Household (hh) net income	20882.80	3613.264	20770.73	3545.863	20562.50	3539.610	21335.60	3521.171
Hh consumption expenses	18153.70	28907.885	17842.77	26928.272	18449.76	29589.444	16196.23	17855.642
Hh level of saving	2729.10	28988.814	2927.96	27147.852	2112.74	29736.751	5139.37	18340.801
Explanatory variables Socioeconomic and demographic								
Age of head of hh	53.67	10.516	52.10	10.138	51.70	10.147	53.20	10.091
Age squared of head of hh	2990.31	1148.909	2817.09	1096.202	2775.32	1095.643	2930.41	1095.994
Gender of head of hh	0.17	0.380	0.13	0.333	0.09	0.283	0.24	0.428
Hh size greater than sample average	0.63	0.483	0.58	0.494	0.56	0.497	0.63	0.485
The hh holds at least an upper-middle school degree	0.13	0.337	0.16	0.371	0.18	0.387	0.11	0.321
At least one farmer in hh	0.58	0.496	0.66	0.476	0.68	0.468	0.60	0.493
Head of hh does not work	0.36	0.482	0.27	0.444	0.21	0.406	0.44	0.499
CMS insurance in 2000	0.04	0.187	0.11	0.311	0.13	0.339	0.05	0.211
Health								
At least one member of hh is ill	0.25	0.433	0.31	0.464	0.32	0.467	0.30	0.460
Maximum average waiting time	10.15	16.062	8.99	13.989	7.78	12.350	12.34	17.399
Geographic								
Liaoning	0.03	0.159	0.15	0.359	0.13	0.339	0.21	0.407
Heilongjiang	0.11	0.319	0.09	0.291	0.11	0.314	0.05	0.211
Jiangsu	0.00	0.000	0.19	0.392	0.18	0.387	0.21	0.407
Shandong	0.12	0.331	0.10	0.299	0.14	0.343	0.00	0.000
Henan	0.16	0.363	0.05	0.217	0.06	0.237	0.02	0.151
Hubei	0.12	0.325	0.11	0.307	0.11	0.319	0.08	0.274
Hunan	0.15	0.358	0.03	0.182	0.04	0.202	0.01	0.107
Guangxi	0.16	0.368	0.17	0.374	0.11	0.308	0.33	0.474
Guizhou	0.15	0.358	0.11	0.315	0.12	0.324	0.09	0.291
Sample size	193		323		236		87	

TABLE E. Sample characteristics in 2006, fourth quartile of income

	Non NCMS counties		NCMS counties					
			All		Participant		Non-participant	
	mean	sd	mean	sd	mean	sd	mean	sd
Dependent								
Household (hh) net income	49648.48	59622.702	52308.44	31037.109	51100.24	30191.538	54704.86	32645.587
Hh consumption expenses	22456.99	21739.502	23352.08	26502.563	21706.69	26527.329	26615.65	26257.740
Hh level of saving	27191.48	63674.709	28956.36	36583.424	29393.55	37708.995	28089.21	34377.512
Explanatory variables Socioeconomic and demographic								
Age of head of hh	51.59	10.136	51.84	10.310	51.11	10.282	53.30	10.252
Age squared of head of hh	2763.97	1128.979	2793.88	1117.737	2717.76	1125.979	2944.87	1090.112
Gender of head of hh	0.20	0.398	0.09	0.284	0.07	0.259	0.12	0.324
Hh size greater than sample average	0.72	0.452	0.59	0.493	0.61	0.489	0.55	0.500
The hh holds at least an upper-middle school degree		0.452	0.24	0.428	0.20	0.401	0.32	0.469
At least one farmer in hh	0.52	0.501	0.43	0.495	0.52	0.501	0.25	0.434
Head of hh does not work	0.28	0.452	0.25	0.436	0.23	0.418	0.31	0.466
CMS insurance in 2000	0.06	0.235	0.16	0.368	0.18	0.384	0.12	0.331
Health								
At least one member of hh is ill	0.32	0.469	0.25	0.433	0.26	0.441	0.22	0.418
Maximum average waiting time	12.90	15.587	14.23	20.944	9.37	12.309	23.91	29.576
Geographic								
Liaoning	0.03	0.177	0.12	0.331	0.14	0.349	0.09	0.289
Heilongjiang	0.14	0.350	0.06	0.245	0.08	0.277	0.02	0.156
Jiangsu	0.00	0.000	0.31	0.463	0.31	0.464	0.31	0.463
Shandong	0.13	0.336	0.10	0.296	0.11	0.317	0.07	0.250
Henan	0.12	0.321	0.04	0.200	0.06	0.235	0.01	0.091
Hubei	0.10	0.305	0.12	0.321	0.12	0.327	0.11	0.311
Hunan	0.22	0.415	0.11	0.311	0.05	0.227	0.21	0.412
Guangxi	0.19	0.391	0.05	0.218	0.02	0.128	0.12	0.321
Guizhou	0.07	0.258	0.09	0.285	0.10	0.301	0.07	0.250
Sample size	155		361		240		121	

TABLE F. Robustness checks for regressions of savings on NCMS, OLS, quartile 1

QUARTILE 1 VARIABLES	(1) Savings	(2) Savings	(3) Savings	(4) Savings
Enrolment in NCMS	630.7	349.8	573.1	-597.1
	(1,543)	(1,663)	(1,913)	(2,802)
Household income		0.439	0.651**	0.683**
		(0.272)	(0.301)	(0.278)
Hh does not work			-3,000	-2,538
			(2,855)	(2,866)
Hh is a farmer			-3,329	-3,722*
			(2,197)	(2,237)
The hh holds at least an upper-middle school degree			1,188	1,745
			(1,830)	(1,852)
Age of the hh			-915.9**	-823.3**
			(384.0)	(359.0)
Age squared of the hh			8.255***	7.841***
			(3.139)	(2.957)
Gender of the hh			1,783	925.1
			(1,915)	(2,121)
Nb of household members greater than the average			-6,329***	-5,716***
			(1,950)	(2,108)
Liaoning				2,072
				(3,647)
Heilongjiang				4,622
				(3,015)
Shandong				30.70
				(3,413)
Henan				9,295**
				(3,583)
Hubei				4,988
				(3,674)
Hunan				-3,054
				(4,517)
Guangxi				-4,172
				(5,407)
Guizhou				5,538
				(3,829)
Constant	-4,992***	-6,834***	21,269*	16,175
	(1,406)	(1,221)	(12,418)	(11,331)
Observations	331	331	265	265
R-squared	0.001	0.008	0.105	0.196

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

TABLE G. Robustness checks for regressions of savings on NCMS, OLS, quartile 2

QUARTILE 2	(1)	(2)	(3)	(4)
VARIABLES	Savings	Savings	Savings	Savings
Enrolment in NCMS	-3,927*	-3,813*	-5,562**	-8,991**
	(2,234)	(2,218)	(2,760)	(3,521)
Household income		0.726*	0.893**	1.127**
		(0.417)	(0.448)	(0.463)
Hh does not work			5,195	3,464
			(3,578)	(3,545)
Hh is a farmer			8,125**	6,376*
			(3,253)	(3,292)
The hh holds at least an upper-middle school degree			6,525**	6,503***
			(2,549)	(2,492)
Age of the hh			-1,602**	-1,681*
			(799.4)	(915.2)
Age squared of the hh			14.17**	16.00**
			(6.966)	(8.113)
Gender of the hh			118.3	-893.5
			(3,348)	(3,700)
Nb of household members greater than the average			-8,113***	-6,211**
			(3,025)	(2,861)
Liaoning				3,075
				(3,882)
Heilongjiang				5,995*
				(3,149)
Shandong				7,466***
				(2,845)
Henan				-3,184
				(13,295)
Hubei				5,361
				(3,316)
Hunan				-7,062
				(11,670)
Guangxi				-10,387
				(6,836)
Guizhou				5,813**
				(2,529)
Constant	-58.59	-8,449*	30,253	28,327
	(1,571)	(4,825)	(22,643)	(26,756)
Observations	297	297	263	263
R-squared	0.007	0.012	0.071	0.142

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

TABLE H. Robustness checks for regressions of savings on NCMS, OLS, quartile 3

QUARTILE 3	(1)	(2)	(3)	(4)
VARIABLES	Savings	Savings	Savings	Savings
Enrolment in NCMS	-3,027	-2,297	-4,048	-7,037
	(2,757)	(2,766)	(4,136)	(4,378)
Household income		0.944***	0.883***	0.871**
		(0.290)	(0.314)	(0.341)
Hh does not work			-9,764	-9,870
			(10,123)	(9,880)
Hh is a farmer			3,436	4,576
			(2,843)	(3,349)
The hh holds at least an upper-middle school degree			2,201	2,191
			(3,581)	(3,536)
Age of the hh			-788.3	-580.2
			(1,713)	(1,730)
Age squared of the hh			6.737	5.591
			(17.91)	(17.74)
Gender of the hh			4,793	4,618
			(6,368)	(6,464)
Nb of household members greater than the average			-6,123**	-3,999
			(3,082)	(2,557)
Liaoning				5,941
				(4,786)
Heilongjiang				8,125*
				(4,736)
Shandong				8,445*
				(4,703)
Henan				-6,931
				(19,806)
Hubei				6,310
				(4,258)
Hunan				6,196
				(6,203)
Guangxi				-4,483
				(6,025)
Guizhou				7,719*
				(3,928)
Constant	5,139***	-15,008**	11,646	1,461
	(1,961)	(6,924)	(38,269)	(40,871)
Observations	323	323	293	293
R-squared	0.002	0.018	0.053	0.084

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

TABLE I. Robustness checks for regressions of savings on NCMS, OLS, quartile 4

QUARTILE 4	(1)	(2)	(3)	(4)
VARIABLES	Savings	Savings	Savings	Savings
Enrolment in NCMS	1,304	4,310	3,202	1,587
	(3,959)	(2,854)	(3,018)	(3,471)
Household income		0.834***	0.839***	0.853***
		(0.0553)	(0.0546)	(0.0519)
Hh does not work			7,667*	7,786**
			(3,906)	(3,734)
Hh is a farmer			4,999	2,786
			(3,955)	(3,762)
The hh holds at least an upper-middle school degree			-3,380	-3,064
			(3,447)	(3,612)
Age of the hh			-797.0	-955.9
			(1,044)	(1,026)
Age squared of the hh			5.271	8.069
			(9.983)	(9.803)
Gender of the hh			-3,507	-2,913
			(4,443)	(4,595)
Nb of household members greater than the average			-5,331*	-4,996
			(3,045)	(3,060)
Liaoning				17,450***
				(4,310)
Heilongjiang				18,488***
				(4,029)
Shandong				7,277
				(5,704)
Henan				16,019***
				(6,147)
Hubei				17,458***
				(4,920)
Hunan				6,763
				(5,292)
Guangxi				4,356
				(10,302)
Guizhou				16,702***
				(3,747)
Constant	28,089***	-17,518***	9,935	1,987
	(3,121)	(3,467)	(26,907)	(25,808)
Observations	361	361	340	340
R-squared	0.000	0.499	0.510	0.548

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

TABLE J. Robustness checks for regressions of savings on NCMS, IV, quartile 1

QUARTILE 1 VARIABLES	(1) Savings	(2) Savings	(3) Savings	(4) Savings
Enrolment in NCMS	525.2	148.0	-1,300	-7,832
	(1,946)	(1,994)	(2,600)	(4,866)
Household income		0.444*	0.702**	0.813***
		(0.259)	(0.283)	(0.300)
The hh does not work			-2,940	-1,965
			(2,871)	(2,995)
The hh is a farmer			-3,105	-2,572
			(2,235)	(2,469)
The hh holds at least an upper-middle school degree			1,373	2,304
			(1,832)	(1,843)
Age of the hh			-938.4**	-914.1**
			(392.3)	(385.9)
Age squared of the hh			8.377***	8.492***
			(3.166)	(3.172)
Gender of the hh			1,642	477.4
			(1,842)	(2,073)
Nb of household members greater than the average			-6,576***	-5,718***
			(2,092)	(2,136)
Liaoning				1,104
				(3,695)
Heilongjiang				4,156
				(3,080)
Shandong				567.6
				(3,582)
Henan				9,580**
				(3,792)
Hubei				3,133
				(3,719)
Hunan				-3,942
				(4,579)
Guangxi				-8,172
				(5,787)
Guizhou				3,454
				(3,751)
Constant	-4,915***	-6,711***	23,196*	24,184*
	(1,452)	(1,474)	(13,420)	(13,158)
Observations	331	331	265	265
R-squared	0.001	0.008	0.100	0.139
Kleibergen-Paap Wald F statistic	183.25	176.99	139.58	43.49
C statistic- Chi sq p-value	0.95	0.92	0.48	0.07

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

TABLE K. Robustness checks for regressions of savings on NCMS, IV, quartile 2

QUARTILE 2 VARIABLES	(1) Savings	(2) Savings	(3) Savings	(4) Savings
Enrolment in NCMS	2,552	3,017	417.7	-9,452*
	(4,902)	(4,897)	(6,284)	(5,644)
Household income		0.772*	1.010**	1.121**
		(0.426)	(0.479)	(0.466)
The hh does not work			5,252	3,422
			(3,600)	(3,439)
The hh is a farmer			6,806*	6,453*
			(3,716)	(3,536)
The hh holds at least an upper-middle school degree			5,275**	6,589***
			(2,495)	(2,272)
Age of the hh			-1,651**	-1,683*
			(812.5)	(873.2)
Age squared of the hh			14.61**	16.03**
			(7.108)	(7.677)
Gender of the hh			-1,289	-792.1
			(3,233)	(3,367)
Nb of household members greater than the average			-7,943***	-6,202**
			(2,897)	(2,816)
Liaoning				3,084
				(3,743)
Heilongjiang				5,991**
				(3,049)
Shandong				7,544**
				(3,047)
Henan				-3,068
				(12,643)
Hubei				5,404*
				(3,203)
Hunan				-7,070
				(11,246)
Guangxi				-10,515*
				(6,044)
Guizhou				5,775**
				(2,560)
Constant	-4,749	-13,919**	27,100	28,685
	(4,186)	(6,884)	(20,500)	(23,992)
Observations	297	297	263	263
R-squared	-0.012	-0.008	0.058	0.142
Kleibergen-Paap Wald F statistic	381.4	375.9	234.5	154.4
C statistic- Chi sq p-value	0.20	0.18	0.35	0.94

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

TABLE L. Robustness checks for regressions of savings on NCMS, IV, quartile 3

QUARTILE 3 VARIABLES	(1) Savings	(2) Savings	(3) Savings	(4) Savings
Enrolment in NCMS	-10,107*	-9,817*	-15,792*	-27,794***
	(5,249)	(5,215)	(8,450)	(10,458)
Household income		0.853***	0.797**	0.709*
		(0.286)	(0.323)	(0.377)
The hh does not work			-12,619	-14,715
			(10,648)	(10,436)
The hh is a farmer			3,773	6,042
			(2,950)	(3,718)
The hh holds at least an upper-middle school degree			2,968	3,201
			(3,718)	(3,749)
Age of the hh			-1,037	-990.3
			(1,690)	(1,649)
Age squared of the hh			9.489	10.80
			(17.67)	(16.88)
Gender of the hh			2,432	684.3
			(6,724)	(6,896)
Nb of household members greater than the average			-6,569**	-3,634
			(3,242)	(2,764)
Liaoning				5,184
				(5,136)
Heilongjiang				10,944**
				(4,991)
Shandong				15,033***
				(5,391)
Henan				-3,454
				(18,163)
Hubei				8,925*
				(4,711)
Hunan				12,657*
				(6,998)
Guangxi				-9,402
				(7,073)
Guizhou				9,990**
				(4,422)
Constant	10,313***	-7,618	28,105	25,949
	(3,122)	(6,925)	(39,675)	(42,197)
Observations	323	323	293	293
R-squared	-0.011	0.003	0.021	-0.000
Kleibergen-Paap Wald F statistic	537.6	523.7	318.3	171.1
C statistic- Chi sq p-value	0.08	0.07	0.05	0.01

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

TABLE M. Robustness checks for regressions of savings on NCMS, IV, quartile 4

QUARTILE 4	(1)	(2)	(3)	(4)
VARIABLES	Savings	Savings	Savings	Savings
Enrolment in NCMS	-8,854	5,130	4,495	308.8
	(6,383)	(4,755)	(5,278)	(8,634)
Household income		0.834***	0.839***	0.853***
		(0.0550)	(0.0535)	(0.0509)
The hh does not work			7,790**	7,682**
			(3,966)	(3,839)
The hh is a farmer			4,747	3,102
			(3,726)	(3,794)
The hh holds at least an upper-middle school degree			-3,256	-3,103
			(3,375)	(3,493)
Age of the hh			-776.9	-982.0
			(1,025)	(993.8)
Age squared of the hh			5.113	8.329
			(9.787)	(9.453)
Gender of the hh			-3,369	-2,929
			(4,251)	(4,466)
Nb of household members greater than the average			-5,366*	-4,962*
			(3,028)	(3,005)
Liaoning				17,574***
				(4,169)
Heilongjiang				18,728***
				(4,116)
Shandong				7,547
				(5,728)
Henan				16,319***
				(6,172)
Hubei				17,389***
				(4,846)
Hunan				6,477
				(5,767)
Guangxi				3,653
				(12,392)
Guizhou				16,726***
				(3,639)
Constant	34,843***	-18,100***	8,512	3,353
	(4,881)	(4,437)	(26,846)	(26,037)
Observations	361	361	340	340
R-squared	-0.017	0.499	0.510	0.547
Kleibergen-Paap Wald F statistic	484.9	483.4	351.4	146.6
C statistic- Chi sq p-value	0.02	0.79	0.73	0.84

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

TABLE N. OLS, new definition of quartiles

VARIABLES	Quartile 1 Savings	Quartile 4 Savings
NCMS participation	-367,04	1185
	(2,822)	(9.063)
Control variables	Yes	Yes
Constant	-10,819*	-6.264
	(5,447)	(37.443)
Observations	246	87
R-squared	0.194	0.613

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

TABLE O. IV , new definition of quartiles

VARIABLES	Quartile 1 Savings	Quartile 4 Savings
NCMS participation	-6.504	6.717
	(5.029)	(17.119)
Control variables	Yes	Yes
Constant	4.603	-12.774
	(6.686)	(40.759)
Observations	246	87
R-squared	0.154	0.609
Kleibergen-Paap Wald F statistic	40.36	42.62
C statistic- Chi sq p-value	0.14	0.64

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

TABLE P. OLS, new definition of quartiles, excluding households with other insurances

VARIABLES	Quartile 1 Savings	Quartile 4 Savings
NCMS participation	-265.6	4,679
	(2,891)	(9,837)
Control variables	Yes	Yes
Constant	-11,407*	3,778
	(5,893)	(40,909)
Observations	244	78
R-squared	0.195	0.667

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

TABLE Q. IV , new definition of quartiles, excluding households with other insurances

VARIABLES	Quartile 1 Savings	Quartile 4 Savings
NCMS participation	-6,156	16,827
	(5,050)	(17,277)
Control variables	Yes	Yes
Constant	-6,076	-9,380
	(6,885)	(41,723)
Observations	244	78
R-squared	0.159	0.651
Kleibergen-Paap Wald F statistic	41.20	49.89
C statistic- Chi sq p-value	0.15	0.00

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

TABLE R. OLS excluding households with other insurances, by quartile

VARIABLES	Quartile 1 Savings	Quartile 2 Savings	Quartile 3 Savings	Quartile 4 Savings
NCMS participation	-488.1	-9,158**	-7,062	156.1
	(2,866)	(3,596)	(4,402)	(3,789)
Constant	14,629	29,731	31.49	7,585
	(11,566)	(26,883)	(43,998)	(26,889)
Observations	263	257	282	311
R-squared	0.197	0.143	0.086	0.548

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

TABLE S. IV excluding households with other insurances, by quartile

VARIABLES	Quartile 1 Savings	Quartile 2 Savings	Quartile 3 Savings	Quartile 4 Savings
NCMS participation	-7,607	-9,494*	-28,194***	-1,571
	(4,891)	(5,660)	(10,711)	(9,207)
Constant	22,865*	29,951	30,082	9,569
	(13,279)	(24,511)	(45,947)	(26,330)
Observations	263	257	282	311
R-squared	0.142	0.143	-0.002	0.547
Kleibergen-Paap Wald F statistic	44.3	149.1	168.7	175.3
C statistic- Chi sq p-value	0.08	0.90	0.01	0.79

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

TABLE T. Average treatment effect of NCMS participation on Savings (in yuan) with the second definition of the poorest and richest individuals (excluding all households with a head who completed an upper-middle school, vocational or college degree from the first quartile and removing all households with a head without education or which did not go further than the lower-middle school from the fourth quartile)

			One to One						*K-nearest neighbour*						*Kernel*					
			calliper 0.5		calliper 0.01		calliper 0.005		neighbour=7		neighbour=5		neighbour=2		no bandwidth		bandwidth=0,05		bandwidth=0,01	
		N	ATT	*p-val*	ATT	*p-val*	ATT	*p-val*	ATT	*p-val*	ATT	*p-val*	ATT	*p-val*	ATT	*p-val*	ATT	*p-val*	ATT	*p-val*
Poorest	**(1)**	**224**	-1942.646	0.680	-4221.784	0.152	-3922.262	0.274	1706.404	0.724	1913.377	0.695	-150.7385	0.976	796.0152	0.867	276.7354	0.952	-3196.824	0.274
	(2)	**222**	-1663.241	0.752	-2058.596	0.445	-206.4754	0.934	2694.398	0.667	2354.71	0.702	-365.8985	0.948	1345.264	0.816	683.5891	0.902	-1979.066	0.445
Richest	**(1)**	**68**	-18675.68	0.354	-34271.6	0.271	-42520.33	0.347	-17319.58	0.355	-17319.58	0.351	-17067.3	0.368	-17061.94	0.324	-16585.93	0.376	-34470.54	0.269
	(2)	**60**	13479.64	0.530	-7256.333	0.751	-4102.2	0.812	14741.11	0.426	14741.11	0.425	14386.71	0.481	20964.31	0.272	17850.73	0.384	-2929.548	0.902

(1) whole sample

(2) excluding households with other insurances

TABLE U. Average treatment effect of NCMS participation on Savings (in yuan) excluding households with other insurances, for *one-to-one*, *k-nearest neighbour*, and *kernel* matching methods (bootstrapped standard errors)

		One to One						*K-nearest neighbour*						*Kernel*					
		calliper 0.5		calliper 0.01		calliper 0.005		neighbour=7		neighbour=5		neighbour=2		no bandwidth		bandwidth=0,05		bandwidth=0,01	
	N	ATT	*p-val*	ATT	*p-val*	ATT	*p-val*	ATT	*p-val*	ATT	*p-val*	ATT	*p-val*	ATT	*p-val*	ATT	*p-val*	ATT	*p-val*
Quartile1	**225**	1,294.642	0.829	2,741.371	0.640	2,976.356	0.568	5,953.482	0.330	6022.682	0.338	6,421.432	0.294	5887.737	0.335	5734.442	0.339	2792.838	0.627
Quartile2	**238**	**-7,563.441**	**0.006**	**-10,177.79**	**0.005**	**-7,198.423**	**0.046**	**-6,759.38**	**0.012**	**-7,242.595**	**0.007**	**-8,284.224**	**0.002**	**-7047.54**	**0.009**	**-7054.684**	**0.009**	**-10132.52**	**0.004**
Quartile3	**245**	-5,894.922	0.117	-6,828.784	0.192	-3,273.261	0.526	**-5,871.143**	**0.070**	**-5,983.918**	**0.071**	**-6179.003**	**0.100**	**-6213.68**	**0.047**	**-6128.111**	**0.051**	-6830.033	0.143
Quartile4	**292**	2,460.744	0.724	1,928.947	0.785	625.6452	0.939	-1,436.71	0.814	-2,372.491	0.695	-4,160.951	0.544	-2268.042	0.708	-2254.036	0.712	1196.714	0.854