



# Social learning and health insurance enrollment: Evidence from China's New Cooperative Medical Scheme<sup>☆</sup>



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## ABSTRACT

This paper examines the role of social learning in household enrollment decisions for the New Cooperative Medical Scheme (NCMS) in rural China by estimating a static game with incomplete information. Using a rich dataset from the China Health and Nutrition Survey, we find that a 10-percentage-point increase in the enrollment rate in a village increases one's take-up probability by 5 percentage points. Using multiple model specifications, we show that the estimated social effects are not driven by simultaneity or common unobserved factors but are consistent with the hypothesis of social learning. We also find that the importance of social effects decreases significantly with households' familiarity with the NCMS as well as with the development of alternative information channels, which further ascertains that the primary mechanism for the social effects is social learning. The evidence suggests that healthier, wealthier, relatively well-educated, older Han male household heads tend to be opinion leaders.

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## 1. Introduction

One of the main obstacles to social program take-up is a lack of information about the program (Moffitt, 1983; Craig, 1991; Currie, 2004). For instance, Aizer (2007) finds that information costs are an important contributor to the low take-up rate in the Medicaid program in the United States. This problem could be more serious in developing countries, as the official information transmission channels are typically inadequate. However, such informational barriers could be

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reduced if information were transmitted through social learning, which refers to any mechanism through which people learn information from others before making decisions (Bandura, 1977). It may take the form of direct communication with or observation of others (Bikhchandani et al., 1998).

The main objective of this paper is to quantify the importance of social learning in household health insurance enrollment decisions by exploiting the unique opportunity of the recent establishment and expansion of the New Cooperative Medical Scheme (NCMS) in rural China since 2003, which is a voluntary public health insurance program for the rural population and is one of the pillars of China's social security system.

In the context of the NCMS, social learning may play a significant role in enrollment decisions and it is worth investigating for four reasons. First, as the NCMS is implemented in rural China, issues related to information barriers could be more serious because of the low education level of the rural population,<sup>1</sup> a poor official information sharing scheme and less transparent government policies.

Second, the operation of the insurance market in general is still new and complex for most households in rural China. Information on the procedures, payoffs and costs associated with the NCMS per se is limited because it is a newly established program. Although local government officials have exerted considerable efforts such as an intensive advertising campaign and door-to-door appeals (Wu et al., 2006; You and Kobayashi, 2009) to convey information to rural households, the details of the NCMS program are still difficult for rural households to understand. For example, Pan et al. (2009) find that approximately 78 percent of survey respondents were unfamiliar with the detailed NCMS regulations implemented in their counties.

Third, some studies find that when the NCMS was introduced, people had low levels of trust in local governments and were skeptical about the promised benefits of the NCMS, as the local governments had consistently imposed a number of taxes and fees on them but misused those funds in the past (Yip and Hsiao, 2009; Yi et al., 2011). This distrust, combined with the low education levels of the rural population and the complexity of the NCMS program, may substantially reduce the effectiveness of the official information campaign, and increase information barriers.

Finally, during the implementation phase of the NCMS, the social norms regarding and perceptions of the program were still being formed. Households in rural China typically live in close-knit villages, where they can effectively communicate with others. An individual villager can learn additional useful information from the behavior of his co-villagers, who might have better knowledge of or experience with health insurance, through word-of-mouth communication or observational learning. Therefore, social interactions and information exchanges among peers could have a long-term equilibrium effect on the take-up rate of the NCMS, which may be above or below than the optimal level (Dahl et al., 2012).

Relative to a growing body of literature studying different aspects of public insurance programs in China, such as design and implementation (Mao, 2005; Brown et al., 2009), and impact evaluation (Wang et al., 2009; Wagstaff et al., 2009; Lei and Lin, 2009), our study contributes to the literature by investigating the determinants of NCMS participation, with a particular focus on the role of social learning at the village level. Specifically, we aim to examine whether an individual's decision to enroll in the NCMS is affected by the decisions of his co-villagers due to the informational content embedded in such decisions, using data from the three most recent waves, 2004, 2006 and 2009, of the China Health and Nutrition Survey (CHNS).

Our paper also contributes to the growing body of empirical literature on the effect of social learning in numerous contexts (Manski, 2000), such as health insurance plan decisions (Sorensen, 2006), retirement savings decisions (Duflo and Saez, 2002, 2003), welfare participation (Bertrand et al., 2000; Dahl et al., 2012), contraception decisions (Munshi and Myaux, 2006), and stock market participation (Hong et al., 2004). Our work is distinct from those listed above in the sense that during our 5-year data period, the NCMS passed through different stages, from inception to expansion and to full coverage, which allows us to investigate the social effects during different stages of the program.

Our empirical strategy also differs from the current practice in the literature. It is well known that the social effect is difficult to identify due to the mixture of simultaneous causality among peers, unobserved common factors within the peer group and endogenous selection into peer group (Manski, 1993, 2000). The existing literature generally adopts one of three approaches to overcome the identification problems. One is to use instrumental variables (e.g., Duflo and Saez, 2002; Chen et al., 2010) to account for the endogeneity of peers' decision. The second approach is to focus on a certain subsample and impose certain assumptions regarding the pattern of social learning to overcome the simultaneity problem. For example, Sorensen (2006) studies the social-learning effects on the employer-sponsored health plan choices of newly hired employees by assuming that their choices are influenced by the existing employees, but not vice versa. The third approach of studying the problem is to use a randomized experiment to generate exogenous changes in peer groups or exogenous variation in information exposure among peers (e.g., Duflo and Saez, 2003; Cai et al., 2009).

In this paper, we adopt a different approach to identify the effect of social learning using observational data. We model the NCMS participation process as a static game with incomplete information, in which households make NCMS enrollment decisions based on their own household-level characteristics (some of which are not observed by other households), village-level characteristics, and the enrollment decisions of other households in the same village. There are several reasons that this model is applicable to a social learning context. First, the benefits that a particular household can obtain from the NCMS crucially depend on the overall enrollment rate. Second, other households' enrollment decisions may reveal useful

<sup>1</sup> The overall education level of the Chinese rural population is quite low, with an average of 6.4 years of schooling based on the CHNS data.

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