



# Extending health insurance to the rural population: An impact evaluation of China's new cooperative medical scheme

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## ABSTRACT

In 2003, China launched a heavily subsidized voluntary health insurance program for rural residents. We combine differences-in-differences with matching methods to obtain impact estimates, using data collected from program administrators, health facilities and households. The scheme has increased outpatient and inpatient utilization, and has reduced the cost of deliveries. But it has not reduced out-of-pocket expenses per outpatient visit or inpatient spell. Out-of-pocket payments overall have not been reduced. We find heterogeneity across income groups and implementing counties. The program has increased ownership of expensive equipment among central township health centers but has had no impact on cost per case.

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## 1. Introduction

Several developing countries have recently used tax revenues to subsidize health insurance for informal-sector (usually rural) workers and their families, or at least the poorer ones among them. In Colombia, the Philippines and Vietnam, for example, the poor are enrolled in the national social health insurance scheme at the taxpayer's expense. The rest of the informal sector either have the option of enrolling (in the cases of the Philippines and Vietnam) or are required to enroll (in the case of Colombia). In all three countries, the household enrolls at its own expense though the contribution paid by non-poor voluntary enrollees is sometimes subsidized (it is, for example, in the case of Vietnam). In China and Mexico, by contrast, households not covered by formal-sector programs (albeit only rural households in China) have the option of enrolling in a separate subsidized public health insurance program. In both countries, the contribution is to some degree linked to household income, with poor households having their contribution paid entirely by the taxpayer, and non-poor households either paying a subsidized flat-rate contribution (the case in China) or an income-related contribution (the case in Mexico).<sup>1</sup> Thailand recently opted for a third route, which was to enroll at the taxpayer's expense all those not covered by the various programs for formal-sector workers.<sup>2</sup>

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<sup>1</sup> To date, Mexico's scheme has targeted the poorest decile which is not liable for contributions.

<sup>2</sup> On Colombia see Escobar and Panopolou (2003), on Mexico see Knaul and Frenk (2005) and Scott (2006), on the Philippines see Obermann et al. (2006), on Thailand see Pannarunothai et al. (2004), and on Vietnam see Knowles et al. (2005).

This paper reports the results of an impact evaluation of China's scheme. The program, which began in 2003 and is being rolled out on a staggered basis with all rural county-level jurisdictions (hereafter counties<sup>3</sup>) to be covered by 2008, replaces China's old village-based rural health insurance program, known as the cooperative medical system or CMS.<sup>4</sup> That scheme all but disappeared following the collapse of the commune system in the early 1980s when China embarked on its market-oriented economic reforms.<sup>5</sup> As of September 2006, an estimated 406 million people were enrolled the new scheme, which was up and running in over half (1433) of China's rural counties. The establishment of the new CMS or NCMS, as the new program is known, was a response to accumulating evidence that high and rapidly rising user charges were causing widespread poverty and deterring families—especially poor ones—from using health facilities.<sup>6</sup> The program—which unlike its predecessor operates at county rather than village level, and exhibits variations in design and implementation across counties—is financed in part through flat-rate household contributions (the poor and certain other groups have their contributions subsidized) and in part through government subsidies, with central government helping county governments in China's poorer provinces with the local government contribution.

One concern with the program is that its budget is too small to make a significant dent in households' out-of-pocket spending. The revenue per enrolled is around only one-fifth of total per capita rural health spending, and copayments in the scheme are high, reflecting large deductibles, low ceilings, and high coinsurance rates. It is, in fact, possible that because the scheme is likely to encourage people to seek care who would not otherwise have done so, and because providers in China are paid fee-for-service through a price schedule that results in higher margins on drugs and high-tech care than on 'basic' services (Liu et al., 1999), insurance may result in people getting more expensive care, and this—together with any impact on utilization rates—may result in *increased* levels of out-of-pocket spending; this appears to have happened in China's urban scheme (Wagstaff and Lindelow, 2008a). Concerns have also been expressed that the scheme may do little to increase utilization of health services among poor households because of the high copayments. Indeed, it has been suggested that these costs may reduce the benefits of the scheme to the poor to such a degree that they may be less likely to enroll. Concerns have also been expressed that the scheme may not attract the relatively good risks, and may therefore suffer from adverse selection.

This paper attempts to shed light on these and other issues, and in the process to contribute to the more general literature on the impacts of subsidized health insurance programs aimed at informal-sector workers.<sup>7</sup> Our focus is on the 189 counties that began implementing NCMS in 2003. We look not only at the impacts on a large sample of households in ten of these counties, but also at the impacts on township health centers and county hospitals in all 189 counties. We also investigate the issue of how the characteristics of different NCMS schemes—their generosity and which services are reimbursable—affect their impact.

The paper is organized as follows. Section 2 provides a brief description of the NCMS. Section 3 outlines our methods. Section 4 presents our data. Section 5 presents the results of the matching exercise and shows how far we are able to reduce biases due to differences in observables. Section 6 presents our estimates of the program's impacts, and the final Section 7 contains a summary and discussion.

## 2. The new cooperative medical scheme<sup>8</sup>

The NCMS differs from the old CMS in several key respects. It is a voluntary scheme.<sup>9</sup> However, to make it fairer and financially more attractive to low-risk households, contributions are supplemented by government subsidies. Another key difference between the NCMS and the old CMS is that the new scheme is to operate at the county level rather than at the village

<sup>3</sup> County-level governments in China include urban districts, county-level cities, and counties. The new program is targeted at rural residents. Most (but not all) reside in counties; urban districts and county-level cities containing rural residents will also receive the program.

<sup>4</sup> The primary stated aim of the scheme is to reduce impoverishment resulting from illness (Central Committee of CPC, 2002). In 2003, piloting of the scheme began in around 300 of China's more than 2000 rural counties in 2003 (Liu, 2004; World Bank, 2005). By 2005, the scheme had been expanded to over 600 counties.

<sup>5</sup> The CMS is often argued to be at least partly responsible for China's remarkable achievements in reducing mortality during the early years of the People's Republic (Sidel, 1993). This program was premised on mandatory contributions to the village production brigade or collective welfare fund, and ensured access to basic medical services for China's rural population. In most part of China, CMS did not survive the de-collectivization of agriculture in the early 1980s, whereby village collective welfare funds were dismantled (Zhu et al., 1989; Liu, 2004). Indeed, by 1993, less than 7 percent of the rural population was covered by the NCMS. There have been various attempts to resuscitate the CMS, including included the RAND Sichuan CMS experiment in mid-1990s (Cretin et al., 1990), the WHO 14 county study in the early 1990s (Carrin et al., 1999), the UNICEF 10- county study in 1997–2000, the World Bank Health VIII project in the late 1990s, and the Harvard 2-county study (Wang et al., 2005). Many of the schemes suffer from poor administration and small risk pools. Moreover, the voluntary nature of these schemes tends to result in adverse selection. Hence, despite these efforts, coverage remained low throughout the 1990s, and by 2003, 80% of China's rural population—some 640 million people—lacked health insurance (MHCHSI, 2004).

<sup>6</sup> See, for example, Liu et al. (2003), Liu et al. (2004), and Yuan et al. (1998).

<sup>7</sup> We discuss below the findings from this literature, in the context of our discussion of the findings from the present study.

<sup>8</sup> This section draws on a county program survey that was done along with the household survey on which this paper is based. More details about the survey are provided in the data section below. For information about design and implementation of the NCMS, also see Mao (2005).

<sup>9</sup> At least in part, this decision was motivated by widespread dissatisfaction in rural areas with a proliferation of fees and taxes. In order to reduce the tax and fee burden of rural residents, the government has eliminated a number of rural taxes and reduced others (Yep, 2004; Lin, 2005). In this context, it was seen as difficult to introduce a new mandatory charge.

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