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The macroeconomic and welfare implications of rural health insurance and pension reforms in China [☆]

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ABSTRACT

We assess the potential impact of rural health insurance and pension reforms on macroeconomic outcomes and social welfare in a dynamic general equilibrium model calibrated to the Chinese economy. We analyze transition paths as well as steady state responses to the new policies. The current reforms in China provide modest rural pensions and reimbursement of a portion of healthcare costs, but at rates that are substantially lower than are already in place in the urban sector. We investigate the potential effect of raising the rural benefit rates to those enjoyed in the urban sector. While both reforms reduce income per capita, we show that the health insurance reforms are potentially welfare improving if they are implemented in a way that leads to reduced out-of-pocket health spending. The welfare gains are driven by rural health insurance providing relief from the risk of catastrophic medical expenditures that can wipe out household savings and force long working hours. A pay-as-you-go rural pension results in a welfare gain in the short-run but welfare loss in the long-run due to the distorting effects of taxes. Despite an increase in required financing due to an aging population, the welfare impact of rural health insurance remains positive when incorporating the projected old-age dependency ratio for the year 2050. However, a pay-as-you-go rural pension creates large income and welfare losses with 2050 demographics.

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1. Introduction

In 2006 the Government of China announced a change in its social goals, with less focus on economic growth, and more on social equality and the promotion of a harmonious society. In line with these new guiding principles, there has been a major expansion of the coverage of both public pensions and health insurance, with the establishment of new schemes in the rural sector, and for people in the urban sector not already covered by employment based systems. We focus on the effects of the introduction of the new schemes in the rural sector. Both the rural pension and health insurance coverage involve subsidies from local and central government but have individual contribution requirements. At present

the rural schemes have lower benefit levels than for urban employees but there are plans to increase benefits towards urban levels. Despite being voluntary, enrollment in the rural pension and health insurance schemes has been exceptionally high, which is unusual given the experience of low uptake in other countries (Aizer, 2007). For instance, by 2011, enrollment exceeded 300 million for the newly introduced rural pension system. Likewise, rural health insurance was largely absent a decade ago and now boasts over 98% coverage rates (China, 2014). The high enrollment may be due to local government officials having enrollment targets and the use of local incentives to enroll.

The primary goals of these new social insurance schemes are to lessen the healthcare disparities across socioeconomic status and between urban and rural sectors and to ease the growing financial burden of medical expenditures and old-age in rural China. Along with the potential benefits of providing insurance coverage to hundreds of millions in rural China, the expansive scope of the new programs imply significant direct financing costs. Tax financing may create distortions, moreover, researchers have linked China's substantial savings rates to the need to provide for retirement consumption and the uncertainty of future medical expenditures (e.g.

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Chamon and Prasad, 2010; Bai and Wu, 2014). If the policy reforms reduce individual savings or labor supply, they could also have macroeconomic effects, potentially lowering the capital stock, wages and income per capita. These concerns may be further compounded by the unprecedented aging of the Chinese population that will occur over the coming decades. As pension and healthcare spending is disproportionately concentrated among older individuals, the upcoming demographic change implies potentially large increases in the fiscal outlays of the programs. Moreover, changing demographics could have other general equilibrium effects that worsen the long-term impact of the policies.

In this paper, we quantitatively assess the impact of rural pension and health insurance policies on macroeconomic outcomes and social welfare in a stochastic dynamic general equilibrium model calibrated to the Chinese economy. More specifically, we analyze transition paths as well as steady state responses to the new policies. Our model employs a life-cycle structure within an overlapping generations framework. Individuals enter the economy as young adults and their earnings potential and health evolve stochastically over time. Each period agents face stochastic medical expenditures and choose how much to work, consume, and save. Current period health status affects medical expenditures, labor productivity, and mortality risk. In addition to age, wealth, and health status, we allow for permanent heterogeneity across agents in terms of education and sector (urban or rural).

We model key differences in social insurance systems, labor productivity, and healthcare across the urban and rural sectors. This gives us the required framework to understand the impact of rural social insurance policy changes in China. The government is assumed to operate all pension and health insurance schemes in the model economy. Importantly, our model allows the rural and urban sectors to operate independent pension and health insurance programs that may be financed locally (at the sector level) or through the central government. Social insurance schemes are financed through a combination of proportional labor income and consumption taxes allowing for the redistribution of resources across agents. We evaluate the effects of the rural pension and health insurance schemes against a baseline policy without such programs. We examine the effect of reforms that would raise rural benefits to the levels currently enjoyed by urban employees. We examine the effects of the policies under the year 2000 demographic structure as well as the higher old-age dependency rate that will be seen with 2050 demographics. We also analyze the effect of these policies along the upcoming demographic transition by building a transition path between steady states with the aforementioned demographic structures.

It is important to note that a key assumption in our model is that reimbursement of health spending through the rural insurance scheme will reduce out-of-pocket healthcare spending in the rural sector. Researchers have argued that, in practice, China's healthcare system encourages the provision of excessive and unnecessary care by underpricing basic care and allowing large profit margins on high-tech diagnosis and drugs (e.g. Yip and Hsiao, 2008). The resulting "profit-seeking" behavior potentially leads healthcare providers to capture a majority of the public funds injected into the healthcare system through the new subsidized insurance schemes. Empirical studies have generally found the new rural health insurance scheme has increased healthcare utilization but has little or no effect on out-of-pocket spending or health outcomes (e.g. Wagstaff et al., 2009; Sun et al., 2009; Lei and Lin, 2009; Hou et al., 2014; Cheng et al., 2015). This means that the current rural health insurance is welfare worsening since it has costs but no public benefits. We analyze the effect of effective health insurance that would actually reduce out-of-pocket payments. This would require changing the incentives for over treatment that are present in the current system or developing

professional ethics in healthcare to put the patient's interests ahead of profit maximization (Blumenthal and Hsiao, 2015). As such, our policy results should be viewed as the potential results of introducing effective health insurance in conjunction with health systems reforms that promote the efficient delivery of healthcare.

From a welfare perspective, health insurance partially protects individuals against idiosyncratic medical expenditure uncertainty over the life-cycle. Similarly, pay-as-you-go pensions that fund a post retirement annuity payment provide partial insurance against idiosyncratic labor productivity and mortality risk. In addition to reducing risk, the tax funding of these systems means there is a redistribution from the rich to the poor. This occurs within sectors through local taxes but the presence of central government financing in the rural schemes also allows for redistribution from the urban to rural sector. Our approach to welfare is to examine the expected utility of an agent entering the workforce as a young adult. We look at the expected utility of different types by sector and education level, which focuses on the effect of the policies on income, transfers and insurance against risk. We also calculate overall welfare as expected utility averaged over types. This corresponds to asking which economy (with or without policy), the agents would prefer to live under, choosing from behind a "veil of ignorance" as to which type (sector and education level) they will be. Choosing from behind the veil of ignorance gives social welfare gains from redistribution from the rich to the poor since agents are risk averse. We measure welfare changes by the equivalent variation in consumption; how much would consumption have to increase for every agent, in every period, to give the same level of expected utility?

We begin our quantitative analysis by calibrating our model to the Chinese economy as of 2000, with no rural social insurance programs in place. We then compare our 2000 baseline results with the stationary equilibrium produced using the baseline parameter values except for the inclusion of rural health insurance or rural pensions. Introducing effective rural health insurance at benefit levels currently existing for urban employees in China would result in an overall decrease in average hours worked, savings, consumption, aggregate output and an increase in taxes. Nonetheless, the health insurance scheme is welfare improving from a social perspective due to the reduction in the risk of large out-of-pocket spending. Specifically, we find a 11.3% increase in expected welfare (as measured by consumption equivalent variation). When decomposing the welfare effects, the expected gain is over 15.4% in the rural sector. In contrast, there is a 2.4% loss of welfare in the urban sector due primarily to the increase in taxes required to finance the government subsidization of the new rural health insurance. In contrast, we find no net long-term welfare benefits from the reallocation of resources when implementing only the pay-as-you pension system. In fact we find an overall decrease in welfare of around 2.8% for China, with declines of 3.3% in urban welfare and 2.6% in rural welfare. Rural welfare declines despite the transfers from the urban to the rural sector because the public pension reduces savings, investment, and wages in both sectors of the economy. Looking forward, we analyze the effects of demographic change by using the projected 2050 age structure for China. Under the 2050 demographics, welfare gains from rural health insurance become smaller; population aging and a smaller working age share of the population means higher taxes are required to finance the benefits and distortions to the economy are larger. We find the negative welfare effect of pension provision become very large with future demographics; with the future age structure and urban levels of pension provision in the rural sector, we estimate a 12.6% reduction in welfare for China. This warns of the potential costs of introducing a large scale pay-as-you-go pension system in China; population aging may make such a system

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