The Chinese saving rate: Long-term care risks, family insurance, and demographics

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ABSTRACT
A general equilibrium model that properly captures the risks in old age, the role of family insurance, changes in demographics, and the productivity growth rate is capable of generating changes in the national saving rate in China that mimic the data well. Our findings suggest that the combination of the risks faced by the elderly and the deterioration of family insurance due to the one-child policy may account for approximately half of the increase in the saving rate between 1980 and 2010. Changes in the productivity growth rate account for the fluctuations in the saving rate during this period.

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1. Introduction

The national saving rate in China has more than doubled since 1980. Establishing the right reasons behind this increase is important, not only for understanding the Chinese economy, but also for understanding the future path of China’s saving glut that has impacted the world economy. However, accounting for this increase has been challenging. In this paper, we construct an overlapping generations model; calibrate it to some of the key features of the Chinese economy between 1980 and 2011; and investigate the role of old-age insurance systems, demographics, productivity growth, and income uncertainty in shaping the time path of the national saving rate. Given the prevalence of family support in China, a model economy that is populated with altruistic agents who derive utility from their own lifetime consumption and from the felicity of their predecessors and descendants is used. Retired agents in this economy face health-related risks that necessitate long-term care (LTC) while working-age individuals face idiosyncratic productivity shocks. The decision-making unit is the household consisting of a parent and children. Since parents care about the utility of their descendants, they save to insure them against the labor income risk, and since children are altruistic toward their parents, they support them during retirement and insure them against the LTC risk. Institutional details and changes in demographics influence the amount of public and family insurance the Chinese households have, and therefore affect their saving behaviors.

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The model incorporates the social security system and provision of long-term care for the elderly since the 1980s in China. While the Chinese government initiated a transition to a public pension system in the early 1990s, institutional care for long-term care needs is almost nonexistent. According to Gu and Vlosky (2008), 80% of long-term care services and more than 50% of the costs in China in 2005 were paid by family members. While the Chinese adult children are expected to take care of their parents, the decline in the fertility rate due to the one-child policy and the aging of the population are placing strains on these traditional family responsibilities. The projected structure of families containing four grandparents and one grandchild for two adult children is expected to make it even harder for children to play a major role in taking care of the elderly in the future.

The initial steady state of the model is calibrated to mimic the economic and demographic conditions in China in 1980 and the final steady state is calibrated to an economy with one-child policy. The initial steady state is shocked by imposing the one-child policy and deterministic simulations as in Chen et al. (2006, 2007) are conducted. Along the transition, key features of the social security system, LTC risk, productivity growth, and the labor income risk in China are incorporated.

This framework is capable of generating changes in the national saving rate in China that mimic the data remarkably well. In our benchmark case, the model is capable of accounting for 57% of the rise in the saving rate between 2000 and 2010. The LTC risk accounts for 47% of this increase while other factors such as the individual income risk or the TFP growth rate account for the remaining 10%. While other aspects of the old age insurance system such as social security are calibrated to the current levels in China, the decrease in family insurance itself leads to higher savings due to the existence of LTC risks. In fact, the impact of the LTC risk on savings is stronger after the year 2000 as more and more one-child cohorts start to become economically active. In this framework, any increase in the risks (higher LTC costs) or decline in government provided insurance (lower social security replacement rates either currently or expected) result in higher saving rates in 2010. On the other hand, increasing government-provided help for the most unfortunate lowers the saving rate in 2010. In addition, the total factor productivity (TFP) growth rate accounts for most of the fluctuations but not the trend increase in the saving rate. In this framework, periods of high TFP growth rates are associated with periods of high marginal product of capital, resulting in high saving and investment rates.

A key feature of the model is the risk-sharing within the family where children play an important role in insuring their parents against the LTC risks while parents insure their children against labor income shocks. Since the one-child policy reduces the extent to which children can provide insurance, households increase their precautionary savings to insure against the LTC risks. This implies that saving behavior of families with one versus two children, especially in areas with high LTC costs is likely to be very different. The implications of the model are compared against the micro data provided by the Chinese Longitudinal Healthy Longevity Survey (CLHLS), the China Health and Retirement Longitudinal Study (CHARLS), and the Urban Household Survey (UHS). First, as in Choukhamane et al. (2013), we document that saving rates of households with twins versus one child differ significantly. More importantly, these differences are more pronounced in provinces with high LTC costs. Our regression results confirm the importance of the interaction between the number of children and the LTC costs as driving the differences in saving rates across households. Next, using micro evidence on inter vivos transfers, we show that the dynastic model provides a good approximation of the transfers between parents and children in the Chinese economy. The model's implications against some macro facts are also quite encouraging. The real rate of return to capital as well as the wage rate mimic their counterparts reasonably well.

While the quantitative performance of the model in accounting for the data is reasonably good, the qualitative implications of our findings are equally important. The picture that emerges from our experiments is the importance of the interaction between the decline in the family insurance and the uncertainty about certain risks that the elderly face in generating the high saving rates in China. These findings differ from several important papers in the literature. For example, in Curtis et al. (2015), who study the impact of changing demographics on China’s household saving rate, children are treated as pure consumption goods and thus play no role in the old-age security of the parent. However, in the CHARLS and CLHLS data that there exist substantial transfers from children, both financial and in terms of time, during the old age of parents. The expected decline in this family insurance plays an important role in our findings. Another important study, Choukhamane et al. (2013) examines the impact of the one-child policy on China’s saving rate. They emphasize the role of children as old-age support for their parents by modeling financial transfers from children to their parents. However, in their model, these transfers are assumed to be an exogenous function of children’s income (or education) and the number of siblings they have. This modeling strategy implies that the transfers from children in their economy are independent of the state of parents (such as their financial and health statuses). Consequently, children have no insurance role in their model. However, in the data transfers from children (both financial and in terms of time) are highly correlated with the financial and health status of parents. Our dynastic model with two-sided altruism implies that the transfers from children are dependent on the parent’s financial and health status, and thus children provide substantial insurance for their parent. Our quantitative results show that the one-child policy partially destroys this type of family insurance, and the changing family

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1 Long-term care need is defined as a status in which a person is disabled in any of the six activities of daily living (eating, dressing, bathing, getting in and out of the bed, inside transferring, and toileting) for more than 90 days.

2 As Bai et al. (2006) document, the rate of return to capital has indeed been very high in China. While there is evidence that average households may not have access to assets with high returns, (see, for example, Song et al. (2014)), in a general equilibrium setting, these returns will eventually accrue to individuals in the economy.

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