

Title: The Chinese health care system reforms and household saving patterns: some stylized facts.

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Abstract

This paper aims at evaluating the relationship between one of the recent health care reforms in the People's Republic of China and households decisions both in terms of out-of-pocket expenditure and saving. Evidence on the results achieved by the reforms of the health insurance sector in terms of reduction of out-of-pocket medical expenditures is still uncertain and contradictory, and very little is known about the relation of these measures on the consumption and saving behaviour of the Chinese population. To shed light on this issue we use data collected by the Chinese Household Income Project (CHIP), through a series of questionnaire-based interviews conducted in urban areas in 1995 and 2002. Our descriptive analysis suggests that there is a positive relationship between public health insurance coverage and household saving. This empirical evidence suggests that public insurance coverage is ineffective as a source of protection against income losses and it might induce households to save more.

Keywords: China, Health Insurance, Health care system reform, Household Saving, Out-of-pocket expenditures, Public Health.

1 Introduction

Given the increasing importance of China in the world economy and the importance of the household sector, in recent time considerable effort has been made to understand Chinese household saving decisions. Almost all studies find that Chinese households have higher saving rate compared with that in the developed nations after the '70s. Since the end of the '70s, China has launched several reforms affecting the economic sector and the social security system. The main objective of

these reforms was to transform China's stagnant, impoverished and centrally planned economic system into a more flexible and decentralized system capable of generating sustained economic growth and increasing the well-being of Chinese citizens.

The economic reform began in 1978 and occurred in two stages. The first stage, between the late '70s and the early '80s, involved the de-collectivization of agriculture, the opening up of the country to foreign investments, and the permission for entrepreneurs to start up businesses. However, most industries remained state-owned. The second stage of the reform, between the late '80s and the '90s, involved the privatization and contracting out of much state-owned enterprises (SOEs) and the lifting of price controls, protectionist policies, and redundant regulations, although state monopolies in sectors such as banking and petroleum remained state-owned. Following these changes, the private sector grew remarkably, accounting for as much as 70 percent of China's GDP by 2005, a figure larger in comparison to many Western nations. Along with the economic reform, the period between the end of the '80s and the middle of the '90s was characterized by high inflation and low real interest rate, which might have induced an increase in saving rate (Aaberge & Zhu, 2001; Modigliani & Cao, 2004; Nabar, 2011).

Within the same period, the Chinese government also implemented a series of reforms in the social security sector, including the pension system. Before the reforms, the saving rate of urban Chinese household was flat whereas, since 1978, it started to increase until the beginning of the 1990s and reached as high as 35 percent of GDP (Modigliani & Cao, 2004). The average saving rate of urban households relative to their disposable income rose from 17 percent in 1995 to 24 percent in 2005 (Chamon & Prasad, 2011; Yang, Zhang & Zhou, 2010). Moreover, empirical studies have provided evidence of the increased uncertainty related to income and consumption induced by the economic sector reforms and, as a consequence, an increase of precautionary savings (Kraay, 2000; Ma & Yi, 2010).

In this paper we focus on the reforms in the health sector and on its potential impact on the household saving rate. In particular, we look at the health care system reform undertaken in 1998 and at its effect on the household saving rate and out-of-pocket expenses. Few papers have examined these effects. What we know today is that following this reform the population covered by Labor Insurance Scheme (LIS) and the Government Insurance Scheme (GIS) declined significantly between 1993 and 1998. Out-of-pocket expenses increased from 28 percent in 1993 to 44 percent in 1998. The lowest income group was reluctant to obtain the medical treatment, and the most important reason was financial difficulties. The health service has worsen and has become more inequitable since the early '90s (Gao et al., 2001).

Some studies show that public health insurance coverage positively affect out-of-pocket expenses. People covered by the public insurance are more likely to move up the medical provider "ladder", such as hospitals. The hospitals deliver more costly tests, drugs, and medical interventions to people who have public insurance coverage (Wagstaff & Lindelow 2008). Few other papers have examined the relation between the household's health risk and saving rate. Chamon and Prasad (2011) find that an older household with health risk save 5 percent more of its income with respect to younger household.

In what follows we will present and discuss such evidence. In particular, the remainder of this paper is organized as follows: section 2 reviews the institutional background of the health care system; section 3 provides a literature review on saving behavior in urban China; section 4 describes the data and provides some stylized facts. Finally, section 5 concludes.

2 The health care sector reform in urban China

Reforms of China's health insurance system in urban areas are brought about by socioeconomic changes as well as by the need to correct the health care system deficiencies. The urban health insurance system consisted mainly of two insurance schemes: i) the Labor Insurance Schemes (LIS) that bore all costs of medical treatment, medicine and hospitalization for the workers and, often, for their dependents; ii) the Government employee Insurance Scheme (GIS) under which medical costs were covered by government budgetary allocation. While GIS and LIS have played an important role in providing China's urban working population with health protection (Liu, 2002), several aspects of the original schemes contributed to China's rapid health care cost inflation and inefficient resource allocation in the '90s. First, GIS and LIS are third party insurance, providing comprehensive benefits with minimal cost sharing to constrain beneficiaries on their consumption of medical services. Without any or limited consumer financial responsibility for the use of health services, these urban insured have no incentive to seek the most cost-effective health care. Second, except for employees in large enterprises with their own hospitals and clinics, both GIS and LIS beneficiaries seek medical services from public hospitals, which are usually reimbursed on a fee-for-service basis according to a government-set fee schedule, which gives providers incentives to over-provide services.

To address these problems, during the '80s, China implemented a whole series of reforms in the urban health insurance system that has gone through three major stages. The first was implemented from the early '80s to 1991, the second from 1992 to 1998 with city-wide pilot reforms, and the third announced at the end of 1998. During the first stage the primary objective of the reform was cost containment and major reform measures include the introduction of demand-side and supply-side cost sharing. During the second stage, the health sector reforms addressed the issue of inadequate risk pooling. Two cities in Jiangxi and Jiansu Province began pilot reforms that used a combination of individual savings accounts and social risk-pooling funds to finance medical expenditures. Before an individual could access the social risk-pooling fund, however, he or she must first pay deductibles from a first tier of individual medical savings account and a second tier of direct deductible equal to 5 percent of annual income. At the end of 1998, the Chinese government announced a major decision to establish a social insurance program for urban workers that replaced the existing LIS and GIS in the cities, known as Basic Insurance Scheme (BIS).

Compared with the old GIS and LIS, the new program expands coverage to private enterprises and smaller public enterprises. Self-employed workers were allowed to enter the program. Worker's dependents are not covered. The program is financed by premium contributions from employers (6 percent of the employee's wage) and employees (2 percent of their wage).¹ Retired workers are exempt from premium contributions and the cost of their contributions is to be borne by their former employers.

The total contributions (on average 8 percent of the employee's wage) were divided into two accounts, where 3.8 percent went into the individual Medical Saving Accounts (MSAs), and each contributor could only use his MSA for the health care expenses; the remaining 4.2 percent went into the Social Risk Pooling (SRP) fund, which was used to cover the large medical expense. At the city level, the government had the right to decide that SRP had to cover only inpatient expenses or catastrophic expenses, defined as the expenditure that exceeds a certain large deductible. In a typical BIS benefit structure, the contributor was expected to pay all of his outpatient medical expenses using his MSA until the funds have been depleted. The unused MSA funds at the end of the year were carried over to the next year, and the unused funds at the end of a person's life became a part of his bequest. When MSA exhausted, the contributor had to pay the outpatient expenses out-of-pocket. In case of any inpatient expense, the contributor has to pay a deductible set equal to 10 percent of his annual wage. The expenses exceeding the deductible were paid by SRP, which limited the payment for each contributor to four times the annual average wage of the employees in that city.

The inpatient expenses exceeding this ceiling could be covered by other supplementary insurance schemes, or had to be paid by the patient out-of-pocket. However, the governments provided other supplementary insurance schemes for their employees. The employees can also purchase the supplementary private insurance individually. Each local government at the city level had to establish the Social Insurance Bureau (SIB), which was responsible for collecting the premium, contracting the payment for services. SIB, working with health authorities, accredited and contracted with a set of health care providers, including outpatient clinics, pharmacies, and hospitals. The central government did not specify the exact payment method to be used by SIBs to pay the health care providers, but it required the risks were to be pooled at the city level and the local governments were responsible for making up any deficits.

The new benefit structure under the current system has two major gaps in coverage. First, the dependents of the urban workers, who used to receive partial coverage, are not covered anymore. Second, the new system has a ceiling on the amount of the individual medical expenditures that can be insured (equivalent to four times the annual average wage in the region). Imposition of this ceiling is due to budget constraint reasons as well as to the political emphasis put on the wide coverage, but it leaves most catastrophic illnesses uncovered. It is estimated that the premium contribution based on the 8 percent of the current wage can only cover about 70 percent of the total outlay under the old systems of GIS and LIS (Ministry of Labor and Social Security, 1999). Moreover, Gao et al. (2007) show that the proportion of elderly covered by health insurance in urban China has declined over the period 1998-2007. This may be partially attributed to the reform of state-owned enterprises, which has resulted in many enterprises being closed and a substantial number of workers being laid off (Gao et al. 2001). As the Government of China has only guaranteed the minimum living allowance, the elderly who were laid off or whose employing enterprises were closed (as a result of the ongoing economic reforms process) may have lost entitlements such as health insurance.

The enormous importance that China has gained over the last decades at international level has brought many researchers to study the socio-economic effects of the ongoing reforms in several economic sectors. In particular, the determinants of the household saving have received a lot of attention from both Chinese and international researchers. Among the others, Chamon and Prasad (2011), Brugiavini, Weber and Wu (2013) and Feng, He and Sato. (2011) use household-level data to explain the high saving rate despite rapid income growth. Chamon and Prasad (2011) use household level data from the Urban Household Survey over the period 1990-2005. They estimate how saving rates vary with time, age, and cohort of the household head. They find a U-shaped pattern of saving over the life cycle, wherein the younger and the older households have the highest saving rates. They investigate also the determinants of the increasing saving rate in the period under consideration and they find: i) home ownership is an important determinant of saving rate; ii) the private burden of education and health expenditure seems among the strongest candidates for explaining the increase in saving rates. This paper considers, among other relevant factors, the effect of health risk on saving but it does not specifically consider the effect of the health care coverage on saving (which instead we do). Brugiavini et al. (2013) use the same data to study the effect of the pension reforms on saving rate. They find that a number of factors can explain the changes over time and its age profile. In particular, households that migrated to the urban areas tend to save more. Also, home-owners who recently bought on the free market save more than tenants; they also save more than home-owners who acquired their property long ago or at the time of the housing reform. Feng et al. (2011) attempt to answer to a similar research question focusing on the effect of the pension reform of 1995-1997 on household savings rates in urban China. They use the Chinese Household Income Project data (the same data we use in this paper). Their estimates show that pension reform boosted household saving rates by about 6-9 percentage points for cohorts aged 25-29 and by about 2-3 percentage points for cohort aged 50-59. Our paper shares with the last three papers the main objective (understanding the determinants of household saving) even though we focus on the potential relationship between the health care sector reform undertaken in 1998 and households saving rate.

To the best of our knowledge, to date there are not contributions studying the relationship between the health care reforms and households saving and consumption using micro data.

The only two papers that focus on the relationship between the reforms in the health care sector and saving are Barnett and Brooks (2010) and Baldacci et al. (2010) but they use macro data. Barnett and Brooks (2010) pool provincial data in China from 1994-2008 to exploit variations in provincial spending on health and differences in saving rates. Their results suggest a statistically significant negative relationship between government health spending and saving in urban areas. The estimated coefficient is around -2, which suggests that each additional 1 yuan of government health spending results in a 2 yuan increase in consumption. They argue that this is a strong impact, as it would imply that a 1 percent of GDP increase in government health spending would boost private consumption by 2 percent of GDP, and yield a total demand effect of 3 percent of GDP for every 1 percent of GDP increase in health spending. Baldacci et al. (2010) examine the impact of expanding social programs on household consumption/saving in China. They simulate the effects of alternative government social expenditure reforms on aggregate consumption using estimates of the age-specific marginal propensities to consume for different income groups and estimates of the lifetime amount of resources available to each cohort (these estimates are obtained from the CHIPs). They

find that the resulting total consumption impacts range from 1.6 percent of GDP for pensions, 0.8 percent for education and 1.3 percent for health. This result implies that a 1 percentage point of GDP increase in social expenditures allocated across pension, education and health would result in a permanent increase in household consumption of 1.2 percent of GDP.

4 Data and empirical analysis.

To explore the statistical relationship between Chinese household saving behaviour and health care system reforms, in this paper we exploit the information included in the cross-sectional data from the Chinese Household Income Project surveys (CHIPs) conducted by the Chinese Academy of Social Science (CASS) in 1988, 1995 and 2002. The surveys use sub-samples from the main nationally representative household survey programme conducted by the Chinese National Bureau of Statistics in the urban and rural areas. The surveys by CASS are reasonably large and designed to be representative of urban China. For the scope of our analysis, we only focus on the 1995 and 2002 waves that represent respectively the pre-reform and post-reform periods. We exclude from the analysis the 1988 wave because there are incomplete information on income and expenditure. Furthermore, we do not consider the rural sample because the Basic Insurance Scheme (BIS) was introduced only in the urban areas.

The urban sample include individuals and households from 11 provinces and municipalities.² The purpose of CHIPs urban data collection was to measure the distribution of personal income. Moreover, the data provide a large set of information on each household member concerning his/her social and economic status, including employment characteristics, wage, taxes, and sources of income, and demographic variables such as, age, gender, marital status, relationship to the household head. Information is also gathered on the household's expenditure and on the general living condition.³

4.1 Summary statistics

The empirical analysis is performed at household level, using information collected at level of the head of the household (socio-demographic and employment characteristics) and at the household level (income, expenditures and saving). We restrict the sample to include only household heads aged 25-65.⁴ Moreover, to avoid potential measurement errors, we trimmed the saving rate (dropping values of the saving rate below the first percentile and above the 99th percentile). After performing these selections we get a sample of 6,496 households in 1995 and 6,252 households in 2002. However, after discarding all those households that present missing value in the income variable and in some employment characteristics variables, the sample size reduces to 5,337 household in 1995 and to 4,551 in 2002.

Table 1 reports summary statistics for household disposable income, consumption expenditure, the resulting saving rates and the out-of-pocket expenses.

Insert [Table 1] here

Table 1: Household income, saving rate and OOP expenses.

Notes: The total household disposable income and household expenditure are reported in 2011 US dollar. The fourth column shows the absolute t-value of a standard test of mean difference.

The measure of disposable income that we focus on includes labour income, property income, transfers, and income from household sideline production minus income tax. The consumption expenditure variable covers a broad range of categories.⁵ All flow variables are expressed in 2011 U.S. dollars, PPP adjusted, and nominal variables in 2002 are deflated using the national CPI (base year 1995=100). Furthermore, we measure savings as the difference between disposable income and consumption expenditure and we define the saving rate as the ratio between saving and disposable income. On average, we observe that the household's total income and the household disposable income increased significantly from 1995 to 2002. Also, the household expenditure increased significantly, even though the rate of growth of expenditure is lower than what we observe for the other two variables.

Out-of-pocket medical expense is defined as the difference between total household's health care expenditure and the amount of the reimbursement by any kind of health insurance. We can observe that the average out-of-pocket expenses increased significantly from 1995 to 2002, which is consistent with the findings of Gao et al (2001) and Wagstaff and Linderlow (2008). This growth could be attributed to two main reasons. First, in 1995 the health care costs of the LIS and BIS beneficiaries' dependents could be partially reimbursed, whereas in 2002 BIS did not reimburse the dependents' health care costs any more. Second, there was a health care cost escalation, which lead to higher household expenses. Moreover, the proportion of the public insurance coverage decreased from 1995 to 2002 significantly. This result is not surprising, since the Ministry of Labor and Social Security (1999) reported that BIS could only cover 70 percent of the total outlay under GIS and LIS. This may be attributed to the reform of SOEs which has resulted in many enterprises being closed and a substantial number of workers being laid-off (Gao et al. 2001).

4.2 Household saving rate changes

Since our main objective is to explore the relationship between the health care reform and saving, we deepen the analysis of these variables exploring their pattern by age groups and by a number of other relevant variables. Table 2 and Figure 1 provide information on the average saving rate by age group. For all age groups the saving rate is significantly higher in 2002. Moreover, in both waves, the saving rate has a U-shape pattern. The lowest saving rate level are registered among the 30-44 age group in 1995 and among the 35-49 age group in 2002. This empirical evidence is consistent with previous findings of Chamon and Prasad (2011), Brugiavini et al. (2013) and Yang et al. (2010).

Insert [Table 2] here

Table 2: Saving rate by survey year and age groups.

Notes: The fifth column shows the absolute t-statistic of a standard test of mean difference.

Insert [Figure 1] here

Figure 1: Saving rate by age groups and survey year

Another interesting aspect is to explore the evolution of saving rate by type of insurance coverage. In China, the household head can be covered either by public insurance, private insurance, or can remain uninsured. According to the data collected, in the 1995 wave, public insurance was provided by either LIS or GIS, whereas in the 2002 wave it was provided only by BIS. In 1995, 70.58 percent of household heads were covered by LIS or GIS, 17.23 percent were covered by private health insurance, while the remaining 12.19 percent of households heads were not covered by any kind of health insurance. In 2002, 68.79 percent of household heads were covered by BIS, 5.31 percent was covered by private health insurance while the remaining 25.9 percent of households heads were not covered by any kind of health insurance.

Table 3 and Figure 2 provide these information by showing the average saving rate by survey, public health insurance coverage and age groups. It is clear that in 2002 the saving rate is significantly higher for households whose household heads were covered by public health insurance and in the 40-54 age group. Not significant differences can be found in 1995 with the only exception of the 30-34 age group.

Insert [Table 3] here

Table 3: Saving rate by health insurance coverage, survey year and age groups.

Note: The fourth and the seventh columns show the absolute t-statistic of a standard test of mean difference.

Insert [Figure 2] here

Figure 2: Saving rate by age groups, health insurance coverage and survey year.

To explore the existence of geographical heterogeneity, in Table 4 we present the household saving rate by province, survey year and public insurance coverage (PI). In 1995, the household saving rate ranges between 7.5 in Sichuan and Chongqing provinces and 18.7 in Shanxi province. In 2002, it ranges between 14.4 in Beijing and 28.9 in Henan. In all provinces, saving rates increased significantly between 1995 and 2002, with the only exception of Beijing where the saving rate decreased, although not significantly. Looking at the last three columns of Table 4, we have a clear picture of the differences in saving rate by public insurance coverage after the reform. In the provinces of Beijing, Shanxi, Henan, Hubei and Gansu the saving rate of households heads covered by the public health insurance (BIS) is not statistically different with respect to the households not covered, while in all the other provinces the saving rate is significantly higher for household heads covered by public health insurance.

Insert [Table 4] here

Table 4: Saving rate by province, survey year and public health insurance coverage.

Note: The sixth and ninth columns show the absolute t-statistic of a standard test of mean difference.

An additional interesting aspect to explore is whether household saving rate changes according to job characteristics. In particular, Table 5 provides descriptive statistics of the saving rate by employment contract (permanent vs temporary), occupation (director of government agency, institution or enterprise, owner of private firm, self employed or professional, skilled worker, unskilled worker), survey year and public health insurance coverage (PI).

Insert [Table 5] here

Table 5: Saving rate by employment characteristics, survey year and public health insurance coverage

Note: The sixth and ninth columns show the absolute t-statistic of a standard test of mean difference.

Household heads with permanent employment save significantly more than household heads with temporary contracts, both in 1995 and 2002. Directors of government agencies, institutions or enterprises save more than all the other job occupations, both in 1995 and in 2002. Within these employment characteristics we can deepen the analysis looking at the public health insurance coverage in 1995 and 2002. There is a clear picture coming out from Table 5. In 1995, before the reform, in all the categories (type of contract and occupation) the saving rate of household heads covered by health insurance is not significantly different with respect to that of household heads not covered. On the contrary, in 2002, after the reform, the saving rate is significantly higher for households heads covered by public health insurance with temporary contracts, employed either in occupations that require or not particular skills.

5 Conclusion

The health care reform is an important component of the Chinese social security reform process. In this paper we focus on the third stage of the health care system reform occurred in 1998, when the Chinese government established a new public insurance scheme, called the Basic Insurance Scheme (BIS) nationwide. BIS is financed by the premium contributions from both the employer and the employee. Differently from the previous public insurance schemes in urban areas, namely the Labor Insurance Scheme (LIS) and the Government Insurance Scheme (GIS), BIS does not reimburse its contributors' health care costs entirely. Indeed, it reimburses all the contributors' outpatient expenses only if they are less than what accumulated on the medical saving accounts and their inpatient expenses are paid out-of-pocket if they exceed some fixed ceiling determined by each local government.

Using data of the 1995 and 2002 wave of the Chinese Household Income Project Survey for the urban households, we performed a descriptive analysis to explore the relationship of the reform in the health care sector in 1998 and household saving rate. The results show that, after the reform, the saving rate of household heads covered by the public health insurance is higher with respect to household heads not covered. This finding suggests that the public health insurance seems to be ineffective as a source of protection against income losses and induces households to save more for precautionary reasons.

To conclude, although the Chinese health care reform in 1998 established a risk pooling mechanism at the city level all over the country and alleviated the employers burden, it cannot be neglected that this reform also made the urban households be less protected and induced them to save more in order to deal with potential future health care expenditure due to negative health shocks.

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Notes

¹ The amount of the employer's contribution was different across provinces and cities. The average level was 6 percent of the employee's wage.

² In the 1995 wave, the 11 provinces and municipalities are Anhui, Beijing, Gansu, Guangdong, Henan, Hubei, Jiangsu, Liaoning, Shanxi, Sichuan, and Yunnan. In the 2002 wave, Chongqing municipality is also included. Since it was one city of Sichuan province and became the municipality in 1997, we combine Chongqing and Sichuan together in the 2002 wave. These 11 provinces and municipalities cover all the 6 geographical areas and can reflect the economic situation of China. In 2002, Guangdong ranked the first in GDP and Beijing municipality ranked the first in per capita GDP, whereas Gansu ranked the 25th in GDP over all the Chinese 31 provinces and was one of the lowest per capita GDP all over the country; Liaoning was heavy industry center, where petrochemical industry, machinery manufacturing industry and metallurgy industry occupied 70 percent of total Liaoning gross industrial output value; Henan was the most important agriculture province, where cultivated area ranked the first all over the country (The Chinese Statistical Yearbook 2003).

³ In the 2002 wave, CHIPs provides two special data sets which investigate rural-to-urban migrant individual and household information. However, such data do not exist in the 1995 wave. Therefore we do not take these rural-to-urban migrant households into account in our analysis.

⁴ We take into account only the working age population because the health insurance coverage is strictly linked to the employers and employees contributions.

⁵ Consumption expenditure includes food, clothing and footwear, household appliances, goods and services, medical care and health, transport and communications, recreational, educational and cultural services and housing.