

Final

**Protection Gap in Rural China and the Potential Role of Mutual Platforms in Financing  
Cancer Treatment**

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## Overview

As the world's second largest economy, China's GDP reached USD 12 trillion<sup>1</sup> in 2017, having grown at a CAGR of 8.5% since 2013. During the same period, China has seen increasing government spending in Total Healthcare Expenditure ("THE") and achieved high penetration of Social Health Insurance ("SHI"). In particular, the New Rural Cooperative Medical Scheme ("NRCMS") now covers c99% of rural population [1]. Despite such growths, there is still a visibly large protection gap facing the population, especially its rural residents in the context of treating critical illness.

While financing healthcare, the NRCMS also promotes the concept of insurance, leading to increasing traction of health insurance in the rural communities, while the latter is perceived as expensive.

A wave of crowdfunding platforms ("Platforms") offering quasi-insurance coverage in recent years have gained significant popularity. Such Platforms resemble the friendly societies in developing communities with common goals and provide financial and social services to individuals since times that predate modern insurance and the welfare state. Unlike their predecessors in other parts of the world that usually provide various services to people with common religious, political or trade affiliations, these Platforms usually have a focused area of critical illness financing for all who have such needs.

The Platforms have been extremely successful in scaling up. The largest three have each built up a customer base of more than 50 million members within a course of two years. Their operation, in particular, the resemblance of elements of insurance have raised questions around regulatory compliance.

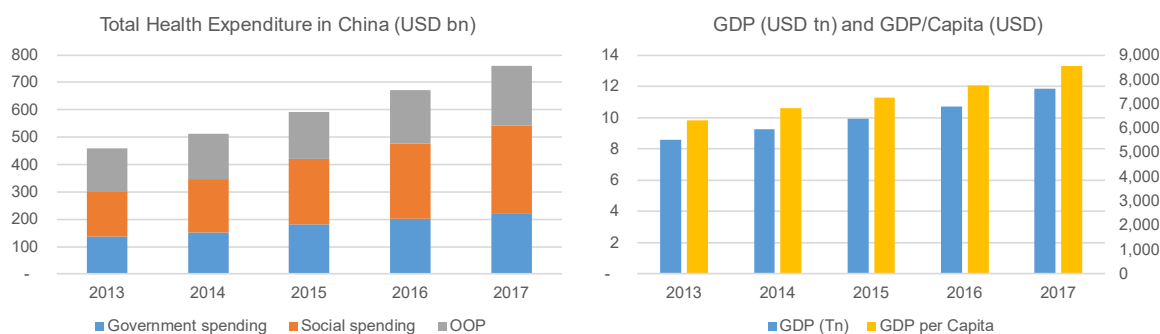
This paper discusses the potential of utilizing the crowdfunding platforms as the working layer of financing critical illness treatment in rural China and introducing commercial insurance to address the excess.

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<sup>1</sup> Exchange rate adopted throughout the paper at 1 USD = 6.91 CNY

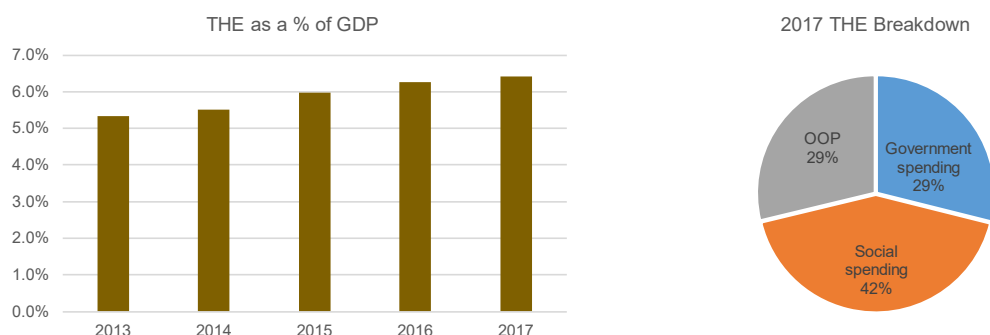
## China Background - GDP and Health Expenditure

Figure 1. China GDP and Total Health Expenditure, National Bureau of Statistics 2018



Against the backdrop of a fast-growing economy that recorded a GDP of USD 12 trillion in 2017 (8.5% CAGR from 2013 to 2017), THE in China amounted to USD 761 billion (14% CAGR since 2013).

Figure 2. THE as a % of GDP and breakdown, National Bureau of Statistics 2017



Despite the fast growth, THE accounted for 6.4% of GDP in 2017, which is notably lower than OECD's average of 9% [2]. Turkey and Mexico are the two countries that have less than 6% of THE/GDP in the OECD. Similarly, out-of-pocket ("OOP") expenses made up 29% of an average Chinese's annual medical costs. In contrast, WHO suggests a threshold of 20% for OOP as a percentage of THE, below which impoverishment due to disease is not significant [3].

### Social Health Insurance Framework for Rural Residents

In addition to basic medical coverage, China's social security system provides pension, unemployment, work-related injury, and maternity benefits. SHI was divided into Urban Resident Basic Medical Insurance ("URBMI"), Urban Employee Basic Medical Insurance ("UEBMI"), and NRCMS, covering different demographics. Since 2016, the government has started to merge URBMI and NRCMS into Urban and Rural Resident Basic Medical Insurance ("URRBMI"), while currently all three coverages are commonly available as at the writing of this paper.

The paper focuses on the coverage provided to rural residents, which could be either NRCMS or URRBMI depending on the region.

### *Genesis*

The rural population were covered by the Cooperative Medical Scheme (“CMS”) prior to 1979, financed by the communes. After the end of communes, the lack of financing coupled with then government’s focus on economic recovery, the CMS faced significant deterioration in funding. In 1997, only 18% of villages in China had CMS, covering 10% of rural residents, with the rest 90% financing healthcare through OOP. [4] As a country with reliance on and roots deep in agriculture and its rural residents, the government decided to pilot the NRCMS in 2003, which has covered c99% the rural population since 2013.

### *Current status*

NRCMS/URRBMI premiums are financed by the government and rural residents, and the cost sharing between the two varies by county. The schemes cover both outpatient and inpatient costs, subject to a list of covered procedures, drugs, and healthcare providers. Deductible, coinsurance, and limit that differ from region to region apply as well.

NRCMS had improved the rural residents’ access to healthcare facilities. Significant increase of healthcare utilisation and higher health expenditure were observed amongst NRCMS members, compared against stats prior to their enrolment [5]. However, the initial goal of NRCMS was to increase basic health coverage penetration, instead of focus on the level of protection, which results in large protection gap in healthcare financing. Furthermore, that most advanced healthcare facilities are located in urban areas increases average expenditure and exacerbates the unaffordability of critical illness treatments.

### **Cost of treatment for critical illnesses and the affordability**

Publicly disclosed costs for various cancer treatments sparse. In order to demonstrate the affordability issue, this section attempts to provide a high-level estimate of the OOP portion of lung cancer treatment for rural residents in Beijing. Lung cancer has the highest incidence in both urban (0.06%) and rural (0.054%) China [6], and the estimated cost of treatment ranges between CNY 200,000 (USD 28,943) and 300,000 (USD 43,415) [7]. The actual costs differ in accordance with the stage cancers are diagnosed as well as the treatments and drugs used. An conservatively estimated OOP of lung cancer treatment could be between CNY 50,975 (USD 7,377) and CNY 75,975 (USD 10,995) for a rural resident in Beijing, and between CNY 65,000 (USD 9,407) and CNY 115,000 (USD 16,643) for their peers in Suihua City, Helong Jiang Province. Details of the estimation is included in Appendix A.

Even with the conservative estimate, the OOP portion of lung cancer treatment still far exceeds the disposable income of rural residents.

Figure 3. Disposable Income of Rural Residents in China, National Bureau of Statistics 2018

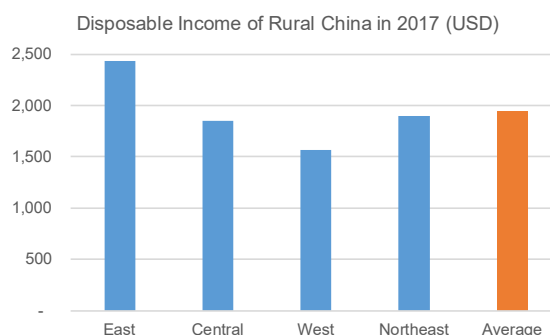


Figure 3 implies that the OOP cost of lung cancer treatment could be 3.8 to 5.7 times the average annual disposable income of a rural patient. It is reasonable to conclude such costs

would far exceed WHO's catastrophic expenditure definition of 40% annual household income [8].

Study shows that early diagnosis, surgery, and chemo/radio-therapies all contribute towards better prognosis and longer life expectancy [9]. All these elements require well-financed access to quality health care.

Aside from lung cancer, according to Swiss Re, there is an estimated USD 805 billion protection gap in China, accounting for both stressful self-financing costs and estimated non-treatment costs due to unaffordability. In addition, low-income households are the most vulnerable, with an estimated protection gap of 1.7 times their annual income [10].

### Overview of critical illness crowdfunding platforms in China.

A wave of online crowdfunding mutual platforms ("Platform") have emerged in China since the early 2010s, aiming to address the protection gap in cancer treatment. Some of the Platforms have been financed by China's tech giants and acquired massive customer bases. Each of the largest three Platforms have more than 50 million members [11]. These Platforms have a significant presence in 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> tier cities in China and are actively exploring rural areas [12].

Table 1. The Largest Mutual Platforms in China

Platform	No. of members	Key investors	Started in
Xianghubao	Over 50 million	Ant Financial	2018
Qingsong Huzhu	Over 60 million	IDG, Tencent	2016
Shuidi Huzhu	Over 70 million	IDG, Tencent	2016

### Business model

These Platforms operate in manner akin to a mutual insurer, or its predecessors the friendly societies, providing quasi-insurance coverage that resembles lump sum payment critical illness insurance policies. The following illustration uses Xianghubao's terms [13].

- **Coverage.** A list of 99 critical diseases and cancers.
- **Underwriting.** 1) Age between 30 days and 59 years, 2) Sesame Score<sup>2</sup> at least 650, 3) medical underwriting, 4) waiting period.
- **Limit.** Members could claim a lump sum when they are diagnosed with covered diseases. The limit reduces with the age upon diagnoses. CNY 30,000 (USD 4,342) for those age between 30 days and 39 years old, and CNY 100,000 (USD 14,472) between 40 and 59 years.
- **Assessment and cap.** Instead of paying premiums prior to insurance coverage inception, all members are assessed equally when and after there is a covered incident on a regular basis. Assessments are scheduled on 14<sup>th</sup> and 28<sup>th</sup> every month, and the amount per member is capped at CNY 0.1 (USD 0.01) per incident and CNY 188 (USD 27) per annum.
- **Operational costs.** Xianghubao adds an 8% management fee to the assessments.

### Current status

Currently the Platforms are not regulated by the China Banking and Insurance Regulatory Commission ("CBIRC"), the regulatory body of banking and insurance in China.

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<sup>2</sup> Ant Financial's proprietary credit rating based on data collected by Alibaba and its partners.

When Xianghubao was launched on 16<sup>th</sup> October 2018 [14], it was marketed through Alipay backed by group critical illness insurance policies underwritten by Trust Mutual Life. On 27<sup>th</sup> November the CBIRC stepped in and banned the sales of the underlying insurance policies, because the effective premium rates of the program were different from Trust Mutual Life's product filing and other compliance issues. Ant Financial subsequently converted the program into a Platform like the rest of its peers, with some changes to the benefit design.

### Natural fit of collaboration with insurance companies

The Platforms have been extremely effective in customer acquisition. In context, Ping An Group, one of the largest financial services conglomerate in China, has 105 million customers from its insurance businesses as at 31 December 2018 [15].

The current business model suggests the revenue comes only from the servicing charges, which may put pressure on the Platforms' financial sustainability in longer term. In addition to that, in exchange for an equal assessment of all members, the decreasing protection limit with age creates natural need for another layer of protection.

Can the Platforms explore an Excess of Loss ("XOL") structure of cooperation with insurers in promoting better health protection?

Figure 4. Illustration of a Potential XOL collaboration between Platforms and Insurance Carriers.

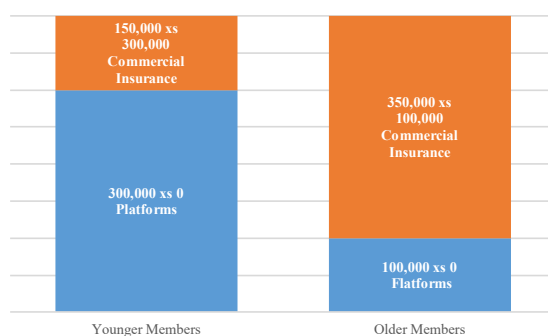


Figure 4 uses the high estimate of Lung Cancer and assumes another nominal CNY 150,000 (USD 21,708) to cover lost of income, increase living expenses and other associated costs.

Directionally, the following are considered from insurers' standpoint.

- **Effective customer acquisition portal.** In addition to the vast customer base, the clear theme of health and protection is very conducive to the purchase of health insurance. The fact that these platforms operate digitally may translate into a younger demographic that are usually better risks.
- **Benefit from the continuous education and awareness promotion.** Most if not all platforms disclose the underlying incidents at each assessment, which increases awareness through empathy and the effect usually ripples through family members and loved ones of the members.
- **Effective management of working layer claims.** Currently the Platforms charge servicing fees at 8% or even lower, and operates on digital platforms, which are the goal of many insurance carriers. Insurance companies might be able to benefit from such efficiency and focus on managing the excess layers.

- **A cheaper insurance coverage.** If actual cost distribution justifies decreasing premium rate (rate on line) in the higher layers, benefiting from the decreasing frequency of larger claims, the excess layers written by commercial carriers could be offered at a cheaper rate. However, if such assumption does not hold, the excess layer might still be priced competitively on a reimbursement basis, effectively having a high “deductible” absorbed by the working layer.

From the perspective of the Platforms

- **Revenue stream with customized coverage.** Aside from creating a new income stream, such a structure would be more customer-focused in bridging the protection gap as opposed to pushing commoditized medical products.
- **Help removing regulatory concerns.** As of now, the Platforms are not regulated by the CBIRC, which has voiced its concern over the potential counterparty risks the Platforms may pose on their members, and hence has been monitoring the industry closely. The Platforms cannot market their programs as insurance or offer any guarantee of payments as required by the CBIRC. Given the large member base, it is unlikely that the regulator would shut down these Platforms. Instead, it is plausible to anticipate gradually increasing regulatory measures. A comparable example is Kyosai (mutual aid organisations in Japan), which are similar in nature to the Platforms. Kyosais were friendly societies in Japan offering mutual aid to a close group of members and had remained unregulated until 2005 when the revised Insurance Business Act expanded its application and included Kyosais under its purview [16]. The proposed XOL structure would imply close interaction between the Platforms and the insurance companies, which may bring the former’s compliance and risk management to a more amicable level from a regulatory perspective.

More importantly, if the above structure is sound, the members would have an affordable alternative to purchasing commercial health coverage outright, with considerations given to the following from an insurance operation perspective

- **Data and analytics.** Insurers would need to understand the pricing of the Platforms members taking into consideration the potentially different demographic profile in terms of age, geography, income, and etc, as well as the associated implication on frequency and severity.
- **Underwriting integration.** Insurers should identify any gaps between the standard medical underwriting protocols and the Platforms’ existing policies.
- **Claims management.** Proper product design should be done for the excess layer, particularly the provider management vis-à-vis a lump sum payment or reimbursement structure.

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## Appendix A – Lung Cancer Reimbursement Calculation

<b>Rural Resident in Beijing</b>		<b>Low</b>	<b>High</b>
Lung Cancer treatment Cost	(1)	200,000	300,000
Deductible	(2)	1,300	1,300
Reimbursement %	(3)	75%	75%
Reimbursement	(4) = [(1) - (2)] * (3)	149,025	224,025
OOP	(5) = (1) - (4)	50,975	75,975

The above estimate is intended to err on conservatism, with the following assumptions.

- All costs are incurred on an inpatient basis. The outpatient costs in Beijing are subject to a CNY 500/year deductible, 50% co-insurance, and CNY 3,000/year limit.
- All costs incurred are NRCMS/URRBMI-covered drugs and procedures, which is usually not the case with cancer treatments that involve many 100% OOP new drugs and advanced procedures.
- Beijing's URBMI and NRCMS has merged since 2018, and arguably provides better coverage than many other parts of China. E.g., if a resident from Suihua City, Helongjiang Province in China (below) incurs the same amount of costs, the OOP could be CNY 65,000 for Low and 115,000 for High.

<b>Rural Resident in Suihua City</b>		<b>Low</b>	<b>High</b>
Lung Cancer treatment Cost	(1)	200,000	300,000
SHI			
Deductible	(2)	800	800
Reimbursement %	(3)	55%	55%
Reimbursement <sup>3</sup>	(4) = [(1) - (2)] * (3)	80,000	80,000
OOP after SHI	(5) = (1) - (4)	120,000	220,000
SHI critical illness			
Deductible	(6)	10,000	10,000
Reimbursement %	(7)	50%	50%
Reimbursement	(8) = [(5) - (6)] * (7)	55,000	105,000
Total reimbursement	(9) = (4) + (8)	135,000	185,000
Total OOP	(10) = (1) - (9)	65,000	115,000

In summary, it is reasonable to conclude that both illustrations are underestimating the OOP costs in lung cancer treatment.

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<sup>3</sup> Subject to an annual limit of CNY 80,000