Mutual Risk Sharing and Fintech: The Case of Xiang Hu Bao

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Summary

Objective: this paper investigates the relation between mutual aid programs based on fintech and traditional insurance.

Platform: Xiang Hu Bao (XHB), the largest online mutual risk sharing platform operated by Alibaba's Ant Financial in China

Theoretical prediction: a separating equilibrium exists that low-risk individuals choose XHB while high-risk individuals purchase traditional critical illness insurance (CII)

Findings:
- XHB holds an advantage in attracting younger individuals than insurance
- The average incidence rate of XHB is 1/7 to 1/6 of CII
- Based on the mutual aid survey data, respondents who already have commercial health insurance are less likely to participate in mutual aid programs; Low-income individuals are more inclined to parrticipate in mutual aid programs; Mutual-aid participants are likely to purchase insurance in future.

XHB vs. insurance

Categories	XHB	Insurance
Pre-determined price	No	Yes
loss sharing	Yes	No
Coverage period	Bi-weekly	1 year to life-long
Indemnity amount	fixed	flexible
Payment method	One time	Multiple payments
Operational process	AI + blockchains	Limited tech.
Purchase	Online	Online+offline

Theoretical prediction

A model: low-risk participants vs. high-risk participants

Differences between XHB and CII (assumed):
- XHB sets price ex-post vs. CII sets price ex-ante
- XHB offers lower coverage than CII

Prediction:

Low-risk participants choose XHB while high-risk participants choose CII

Low incident rate

They compare the incidence rates between XHB and CII for the same set of critical illnesses in the same age group.

Group	# XHB (6-period lag)	# XHB Cases		IR^x (per million)		IR^i (per million)		IR^i/IR^x	
Types of illnesses:		CI6	CI25	CI6	CI25	CI6	CI25	CI6 (t-stats)	CI25 (t-stats)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: 'Stable' Periods									
All Ages	94,039,375	1,804	1,875	460	478	3,192	3,459	7.34 (15.06)	7.66 (15.12)
<10	6,686,520	23	25	81	91	173	254	2.46 (7.47)	3.19 (8.79)
10~19	4,854,522	9	11	46	54	239	309	6.39 (8.80)	7.21 (7.84)
20~29	27,647,050	153	162	133	141	1,024	1,132	8.51 (14.50)	8.80 (15.11)
30~39	28,843,376	475	494	395	411	2,440	2,610	6.45 (17.34)	6.64 (17.38)
40~49	14,904,129	477	492	768	793	4,910	5,272	6.80 (13.89)	7.07 (14.15)
50~59	11,103,777	666	690	1,440	1,491	7,986	8,657	6.53 (10.33)	6.85 (10.41)

XHB participants are **much healthier** than CII buyers even in every age group

1. Is it completely due to lower indemnity for XHB?

CII: Ping An Insurance (23rd on the Fortune Global 500 list)

E生平安·重疾险 2021版

覆盖100种重大疾病，确诊即赔

· 投保流程简单，无需体检，仅需健康告知
· 增加少儿款，全家可购买
· 责任升级，首家上线ICU治疗津贴
· 性价比高，保费61元/年起

NEW
消息通知
电话咨询

| 保障计划 | 产品特色 | 投保须知 | 常见问题 |

保障计划	保障详情解读				单位：人民币（元）
保障类型	保障项目	少儿款	基础款	常规款	高端款
健康保障	重大疾病保险金	20万	20万	30万	50万
	重症监护室治疗保险金	/	2万	3万	5万

1. Is it completely due to lower indemnity for XHB?

Ping An's critical illness plan (30 days to 65 years)

- Young: <15 years, CNY 200,000, CNY61
- Basic: 16-65 years, CNY 200,000, CNY 131
- **Classic: 16-55 years, CNY 300,000, CNY 197**
- Premium: 16-45 years, CNY 500,000, CNY 231

XHB's critical illness plan (30 days to 59 years)

- **<40 years, CNY 300,000, CNY78 - 156**
- ≥40 years, CNY 100,000, CNY78 - 156

2. Financial inclusion for people without other commercial health plans

- According to the statistics of XHB, 60% of its participants come from third and lower tier cities, counties and rural areas in China.

- If people from lower tier cities and rural areas have limited access to commercial insurance plans, XHB would serve as an important option to choose.

In a market, participants have obstacles to purchase commercial insurance, and are not offered with XHB and CII having equal access.

2. Financial inclusion for people without other commercial health plans

In Table 6, the survey evidence shows that respondents with commercial medial insurance are less willing to participate in mutual aid programs

|	(1) All	(2) All	(3) All	(4) All	(5) <40	(6) ≥40
AGE	0.10***	1.28***	1.24***	1.04***	0.17***	-0.35***
	(7.10)	(15.25)	(14.60)	(12.18)	(9.02)	(-3.05)
AGE²		-0.24***	-0.23***	-0.20***		
		(-14.38)	(-13.88)	(-11.69)		
TIER			-0.01**	-0.01	-0.02***	0.03***
			(-2.55)	(-0.95)	(-2.68)	(2.94)
INC2				0.25***	0.29***	0.16***
				(12.52)	(12.68)	(3.89)
INC3				0.33***	0.37***	0.22***
				(12.49)	(12.29)	(4.00)
INC4				0.39***	0.45***	0.23**
				(8.37)	(8.23)	(2.40)
INC5				0.24**	0.17	0.45**
				(2.52)	(1.57)	(2.29)
INS			-0.25***	-0.30***	-0.28***	-0.36***
			(-14.28)	(-16.75)	(-14.16)	(-9.59)
FEMALE				-0.08***	0.01	-0.01	0.06
				(-3.92)	(0.01)	(-0.34)	-1.45
SS				0.58***	0.55***	0.57***	0.47***
				(21.37)	(20.26)	(19.06)	(7.35)
INTERCEPT	-0.62***	-1.97***	-2.21***	-2.13***	-1.25***	0.3
	(-16.64)	(-19.17)	(-20.46)	(-19.75)	(-21.68)	-0.76
N	58,320	58,320	58,320	58,320	45,024	13,296
R²	0.001	0.003	0.01	0.01	0.02	0.01

3. Market segmentation by the big tech platform

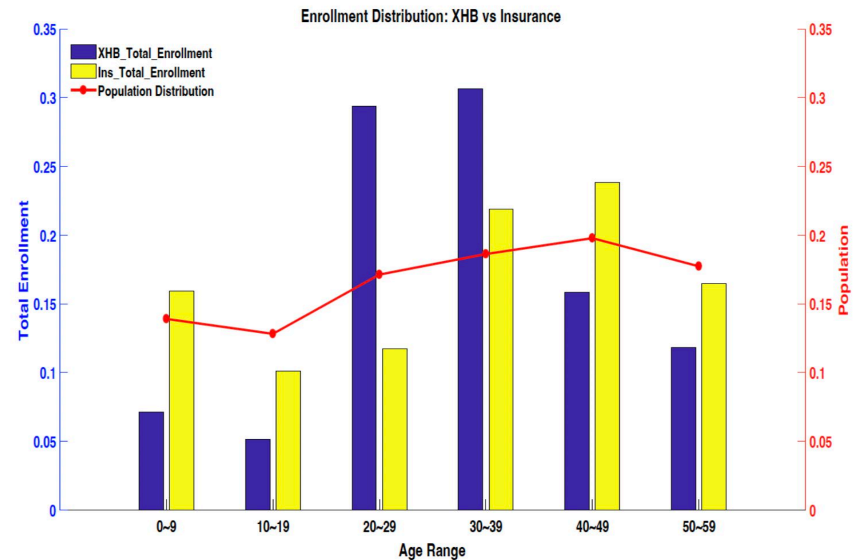## 1. Information search costs (**Alipay**)

- leading payment platform in China
- 711 million Alipay mobile users
- 54% of the market share in China

alipay.com Audience Demographics

Age Distribution
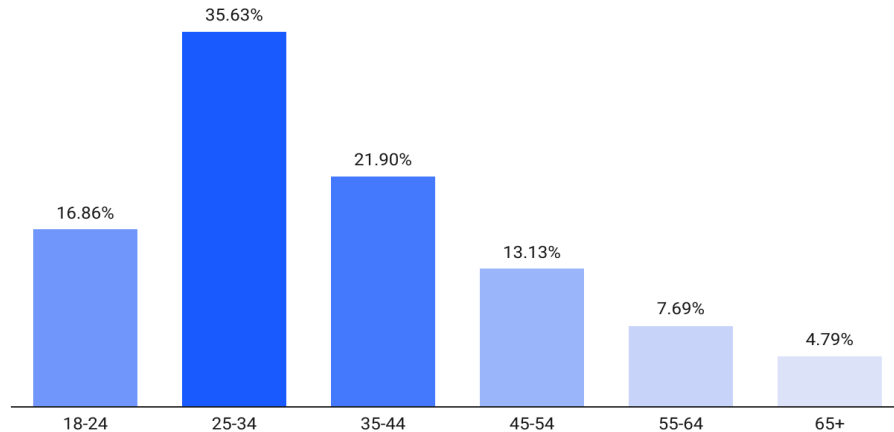
Source: Enterprise Apps Today

Enrollment Distribution: XHB vs Insurance

XHB: the sample of Alipay users
Insurance: the sample of ?

2. Financial heath (**Sesame score**)

- Alipay has advanced techniques to introduce its Sesame Credit system into the health policies.

- Users with a score of 600 or above can participate.

Good financial health=>Good physical health=> low incident rate

Traditional insurance firms do not have such tech platforms

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AGE^2		-0.24***	-0.23***	-0.20***		
		(-14.38)	(-13.88)	(-11.69)		
TIER			-0.01**	-0.01	-0.02***	0.03***
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R^2	0.001	0.003	0.01	0.01	0.02	0.01

Table 6: the probability of joining a mutual aid program for the higher-income groups is greater than the benchmark group

4. Is it in an equilibrium?

How China's healthcare mutual aid industry folded in just 3 years

"**Unsustainable business model:**

Mutual aid is like a private version of social security, which works only if both the young and the old, the healthy and the less healthy participate, an executive at an insurance company said. Online mutual aid platforms required no threshold for participants, which might work well in attracting members at first, but **inevitably the programs eventually become more attractive to high-risk groups, the executive said**."

https://www.straitstimes.com/asia/east-asia/how-chinas-health-care-mutual-aid-industry-folded-in-just-3-years

4. Is it in an equilibrium?

- **Number of participants declined:**
- In March 2020, more than 100 million members participated.
- In May 2020, the number of participants started to decline.
- In December 2020, 72 million members remained.

- **Young people were exiting:**
- In June 2020, 71% of participants were ages 39 and younger
- In December 2020, the ratio declined to 67.70%
- In December 2020, members between ages 40 and 59 climbed to 32.3 per cent from 28.81 per cent.

In 2020, XHB capped member payments
at CNY 188, higher than the earlier costs

4. Is it in an equilibrium?

Period	# Claims (All) (1)	# (<40) (2)	# (≥40) (3)	IR_t^x (per million) (4)
201901P2	2	2	0	0
201902P1	1	0	0	0
201902P2	3	3	0	0
201903P1	1	1	0	0
201903P2	1	0	0	0
201904P1	3	3	0	0
201904P2	9	8	1	9
201905P1	10	6	4	7
201905P2	32	23	9	22
201906P1	100	53	47	64
201906P2	150	90	60	87
201907P1	286	178	108	141
201907P2	496	301	195	227
201908P1	500	319	181	211
201908P2	615	347	268	235
201909P1	632	377	255	226
201909P2	1,581	862	719	540
201910P1	1,718	904	814	563
201910P2	1,731	863	868	549
201911P1	1,735	857	878	538
201911P2	1,837	811	1,026	552
201912P1	1,931	860	1,071	556
201912P2	1.953	863	1.090	547
202001P1	2,025	882	1,143	553
202001P2	2,279	982	1,297	610
202002P1	2,381	1,056	1,325	609
202002P2	1,045	459	586	264
202003P1	1,047	462	585	260
202003P2	1,003	440	563	247
202004P1	1,753	709	1,044	430
202004P2	2,559	835	1,724	621
202005P1	2,411	833	1,578	582
202005P2	2,234	851	1,383	539
202006P1	2,219	801	1,418	532
202006P2	2,213	768	1,445	529
202007P1	2,291	751	1,540	544
202007P2	2,275	733	1,542	540
202008P1	2,370	776	1,594	563
202008P2	2,344	757	1,587	557
202009P1	2,336	775	1,561	554
202009P2	2,300	770	1,530	547
202010P1	2,303	785	1,518	547
202010P2	2,660	885	1,775	632
202011P1	2,663	873	1,790	631
202011P2	2,607	869	1,738	619
202012P1	2,554	867	1,687	605
202012P2	2,810	917	1,893	670
Total	52,250	21,272	30,978	430 (Avg)

- Conduct tests based on the subsamples in different periods

5. The health risk of participants and health plan choices

It would be ideal to test how an individual's health risk level affects her decision in MA programs or insurance programs.

Due to data limitation, is it possible to conduct such tests based on survey respondents' residential location information at the county or city levels?

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让 中 国 了 解 自 己
让 世 界 认 识 中 国
Let China know herself　Let the world know China

Conclusion

Research question: timely and interesting

Theoretical framework and empirical tests: solid and convincing

Main comments:
- Alternative explanations
- Sub-period analyses
- Health risk and MA vs insurance choices