Growing out of the growing pain:
Financial literacy and life insurance demand in China

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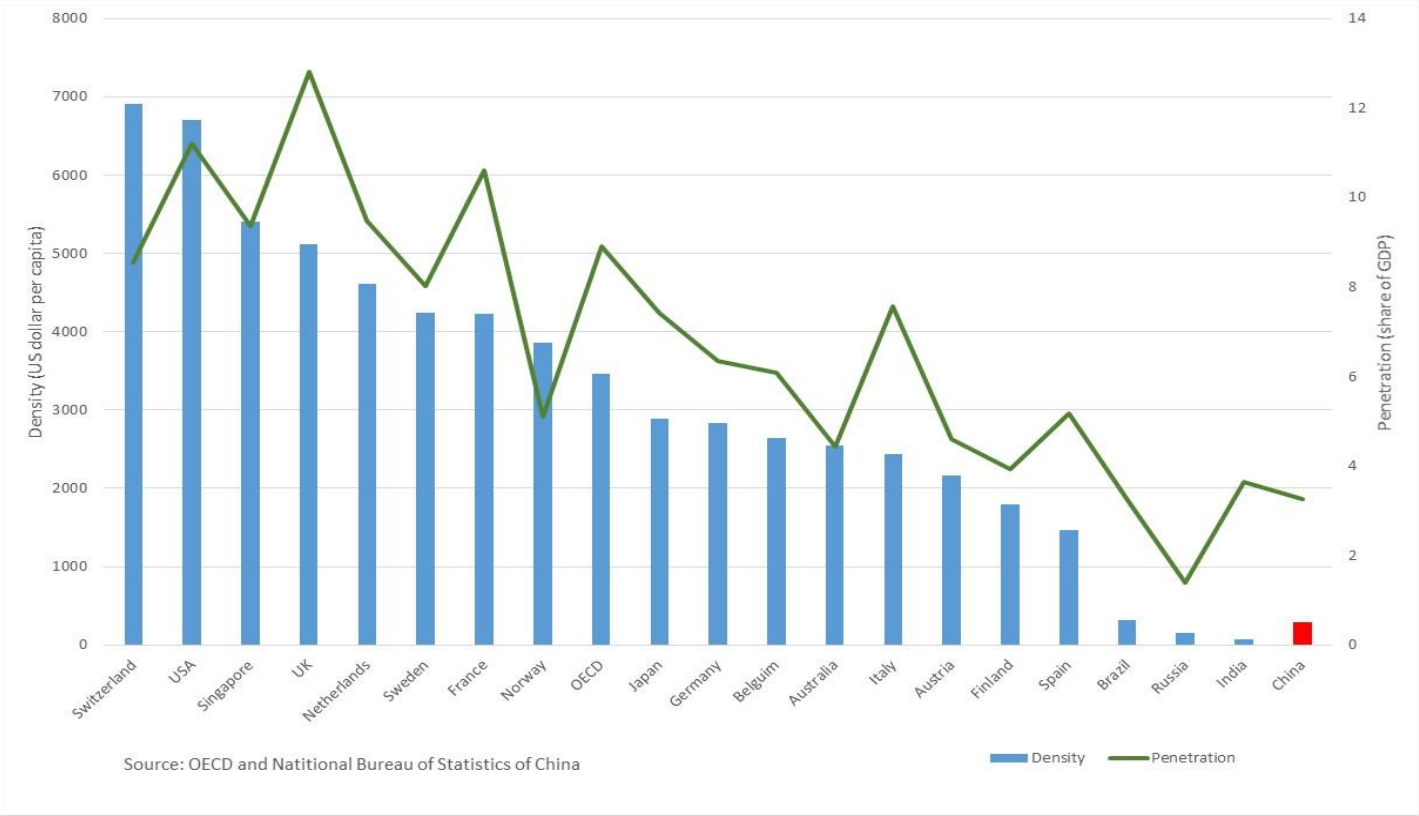
1. Introduction and motivation

China: an insurer's "dream"

- Third largest life insurance market in the world according to *Munich Re Economic Research (2018)*
- Accounting for 5% of the world's premium volume
- Leading the world in terms of premium growth (average per head premium payment: 70 RMB in 1999 → 1952 RMB in 2018)
- Yet, insurance penetration (premium as a share of GDP) remains extremely low

Insurance density and penetration rate (2018)



"Growing pain"— *Economist (2011)*

- Only 114m Chinese people hold life insurance, out of a population of 1.4bn (*Weinland and Ralph, 2019*)
- As a result, both local and foreign insurance companies operating in China face serious problems
- This scenario has been described as a 'growing pain' (*Economist, 2011*)

How to recapture the growth
--understanding Chinese customers' demand

- China's insurance market has huge potential
- Retreating is unwise, so actions are needed to 'grow out' of the 'growing pain' (*Yean, 2013*)

How to recapture the growth
--understanding Chinese customers' demand

- Why is the demand for life insurance in China so low?
- Does the low financial literacy characterizing the Chinese population (*Feng et al., 2019; Yuan and Jin, 2017*) play a role?
- Our research answers this question using two unique micro datasets to study the determinants of the demand for life insurance

2. Contribution

Our contribution (1)

- Financial literacy has been found to be a very important factor affecting financial market participation in developed countries (e.g. *van Rooji et al., 2011*; *Lusardi and Mitchell, 2014*), as well as China (e.g. *Zou and Deng, 2019; Yin et al., 2014*)

- Yet, the effect of financial literacy on life insurance demand has not been widely explored

- We focus on financial literacy as a possible determinant of life insurance demand in China

Our contribution (2)

- Our work also contributes to the scant literature on the determinants of the demand for life insurance in China

- This literature is either based on aggregate data (*Hwang and Gao, 2003; Hwang and Greenford, 2005*) or on relatively dated household-level data (*Shi et al., 2015*)

4. Data

- 2013 wave of the China Household Finance Survey (CHFS)
- 2014 wave of the China Family Panel Studies (CFPS)

China Household Finance Survey (CHFS)

- Nationally representative longitudinal survey
- The first round of the survey was conducted in 2011; sample size: 8,438 households
- Second round conducted in 2013: 28,141 households; covering 29 provinces
- Also representative at provincial level
- Our final sample consists of 25,016 respondents

China Family Panel Studies (CFPS)

- Nationally representative longitudinal survey
- The first round was conducted in 2010. Other waves: 2012, 2014 (13,946 households), 2016
- Only the 2014 wave includes a Financial Literacy (FL) module
- Our final sample consists of 3,830 respondents

4. Why financial literacy and how we measure it

Why financial literacy?

- Financial literacy is a very important factor affecting financial market participation throughout the world (*Feng and Seasholes, 2005*; *Van Rooji et al., 2011*)
- Financial literacy ↓information asymmetry, while ↑ the sophistication of investors ⇒ boost participation in financial markets
- Lacking financial knowledge contributes to the low participation rate of Chinese people in financial markets (*Zou and Deng, 2019; Yin et al., 2014*)

How to measure financial literacy (CHFS)?

- Following *Angela et al. (2009), Calvet et al. (2009), and Van Rooji et al. (2011)* , we adopt multiple measures of financial literacy:
  - Level of attention to financial/economical information
  - Number of correct answers to three finance questions
  - Dummy variable =1 if the respondent took finance/economics classes in the past, 0 otherwise
- Additionally, we also adopt the commonly used factor model to construct a comprehensive index of FL (*van Rooji et al., 2011*)

How to measure financial literacy (CFPS)?

Financial knowledge

- Financial knowledge (FK) test:
  - 5 basic concepts on simple interest, interest compounding, inflation and time value of money
  - 8 advanced concepts on risk-return nexus, risk diversification, working of financial products and financial markets

How to measure financial literacy (CFPS)?

- For both basic and advanced financial knowledge (FK) questions, we have two measures:

  Summary scores: number of correct answers (*Atkinson and Messy, 2015*)

  Factor analysis indices (*van Rooij et al., 2011; Hsiao and Tsai, 2018*)

How to measure financial literacy (CFPS)?

Financial behavior

- Make use of questions referring to behaviours such as thinking before making a purchase, saving, budgeting, paying bills on time, and borrowing to make ends meet
- The financial behaviour score counts positive behaviours exhibited and takes a minimum value of 0 and maximum value of 9

How to measure financial literacy (CFPS)?

Financial attitude

- The survey contains statements to gauge respondents' attitudes towards money and planning for the future

- The financial attitude score thus ranges from a minimum of 3 to a maximum of 15

Some basic statistical evidence (CHFS)

Variables title	Description					
Atten.	Level of attention to financial/economical information					
Grade	Number of correct answers to the three finance questions					
Class	Dummy variable: 1 if the respondent took finance/economics classes before, and 0 otherwise					
Index	Financial literacy index (constructed using factor analysis)					
Variables	Mean	Std. Dev.	Min	Median	Max	Obs.
Atten.	2.16	1.12	1	2	5	25016
Grade	0.68	0.82	0	0	3	25016
Class	0.08	0.27	0	0	1	25016
Index	0	0.96	-1.17	0.02	1.95	25016

Summary of the statistical evidence (CHFS)

- The level of financial literacy is clearly low in China no matter what measure is used
- Over 60% of households barely pay attention to finance/economics information and can therefore be considered as having limited financial knowledge

Some basic statistical evidence (CHFS)

		1	2	3	4	5
Atten.	Insured rate	10.4%	19.6%	24.2%	27.7%	26.9%
		0	1	2	3	
Grade	Insured rate	12.2%	23.5%	27.0%	28.5%	
		N		Y		
Class	Insured rate	16.8%		35.7%		

Summary of the statistical evidence (CHFS)

- Those groups who pay lower attention to finance/economics information also have lower participation rates in life insurance markets
- For instance, 10.4% of respondents in the lowest *Atten* category have insurance, compared to 26.9% in the highest category
- A similar pattern is observed for *Grade* and *Class*

Some basic statistical evidence (CFPS)

Variables title	Description					
fk_score_b	Basic financial knowledge score					
fk_score_a	Advanced financial knowledge score					
fb_score	Financial behavior score					
fa_score	Financial attitude score					
Variables	Mean	Std. Dev.	Min	Median	Max	Obs.
fk_score_b	2.99	1.53	0	3	5	3830
fk_score_a	3.29	0.84	0	3	8	3830
fb_score	5.40	2.00	1	6	9	3830
fa_score	10.31	2.95	3	10	15	3830

Summary of the statistical evidence (CFPS)

- In the CFPS, the average percentage of insured respondents among people who scored the minimum (maximum) in the basic financial literacy questions are 17.17% (50.39%)

- The corresponding figures for the advanced financial literacy questions are 21.95% (44.64%),

- whilst for financial behavior and financial attitude, they are respectively 15.22% (39.13%), and 35.29% (42.35%)

5. Baseline specifications

Empirical models

We consider the following two variables in our empirical regressions:

- a dummy variable for whether the respondents own life insurance (*ins_hh*)
- the monetary value of the insurance premium paid (in log; *ln_prem*)

Empirical models

The following Probit and Tobit models will be estimated :

- Model 1:

$$Pr\,(ins\_hh=1)=\phi\,(\alpha+\beta.Financial\ literacy+\gamma.Control+\varepsilon)$$

- Model 2:

$$ln\_prem=\alpha+\beta.Financial\ literacy+\gamma.Control+\varepsilon$$

6. Main empirical results

Summary of the results (CHFS)

- Marginal effects (MEs) for the Probit models range from 1.9 percentage points (pp, *attn*) to 4.7 pp (*class*)

[For comparison, the corresponding MEs for education range from 0.4 to 0.6 pp]

- For the Tobit models, MEs range from 15.8 pp (*attn*) to 33.3 pp (*class*)

[For comparison, the corresponding MEs for education range from 3.3 to 5.2 pp]

Summary of the results (CHFS)

- The impact of having taken finance/economics classes is the largest
- The impacts of *Attention* and *Grade* are smaller and similar

Summary of the results (CFPS)

- Marginal effects (MEs) for the Probit models range from 0.5 (fa_score) percentage points (pp) to 2.9 pp (fk_score_b)

[For comparison, the corresponding MEs for education are either insignificant or equal to 0.4 pp]

- For the Tobit models, marginal effects range from 3.8 pp (fa_score) to 20.8 pp (fk_score_b)

[The corresponding MEs for education are either insignificant or equal to 0.3 pp]

Summary of the results (CFPS)

- The impact of basic financial knowledge is the largest,
- whilst that of financial attitude is the smallest

7. Robustness tests

Robustness Tests (1, CHFS, CFPS)

- All our results were robust to using Linear Probability Models, as well as Instrumental Variable (IV) models

- Instruments used were:

  - Provincial-level Financial Literacy (CHFS; CFPS)

  - Mother and father's education (CFPS)

Robustness Tests (2, CHFS)

- Our measure of life insurance includes narrow life insurance, health and accident insurance, which all fall under the general umbrella of life insurance
- These are often sold as a bundle in China, and it is often difficult to separate them in surveys
- As the CHFS provides information on take-up and premium paid on the different components, we showed that our main results were robust to only focusing on narrow life insurance

Robustness Tests (3, CFPS)

- We replaced the basic and advanced financial knowledge scores with two indices of financial knowledge calculated using factor analysis (van Rooji *et al.*, 2011)
- These indexes explicitly take into account the differences between incorrect answers and "don't know" answers to the financial quizzes
- All results were robust to using these new indices

8. Conclusions and policy implications

Conclusions and policy implications

- Understanding what affects the demand for life insurance in China may help the currently struggling insurance industry eventually succeed in this huge market

- This study focuses on the role of financial literacy

- We hypothesize that knowledge is helpful to reduce information asymmetry or disbelief, consequentially increasing participation in the insurance market

Conclusions and policy implications

- Using unique survey data, we provide strong evidence that financial literacy is associated with a higher probability of purchasing insurance and premium paid
- Our results have clear policy implications
- The insurance industry and/or the government should consider ways to educate the general public, providing people with the economic and financial knowledge necessary to understand insurance products

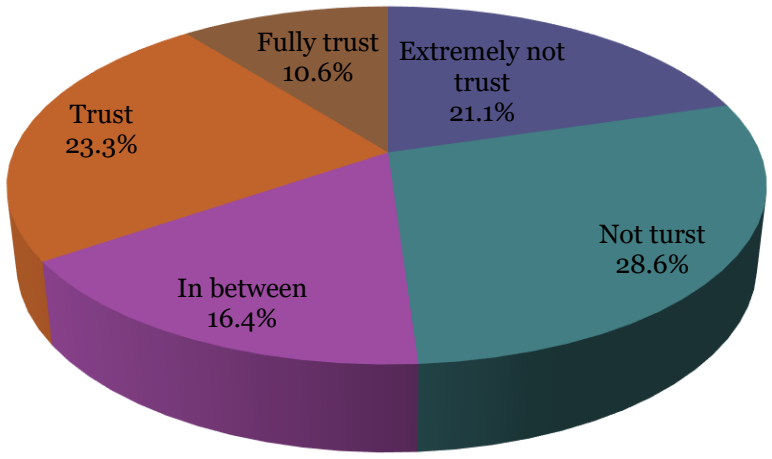
Conclusions and policy implications

- Improving public understanding about financial/ insurance products ⇒
- push the general demand for insurance up, helping the Chinese insurance market to finally 'grow out of the growing pain'

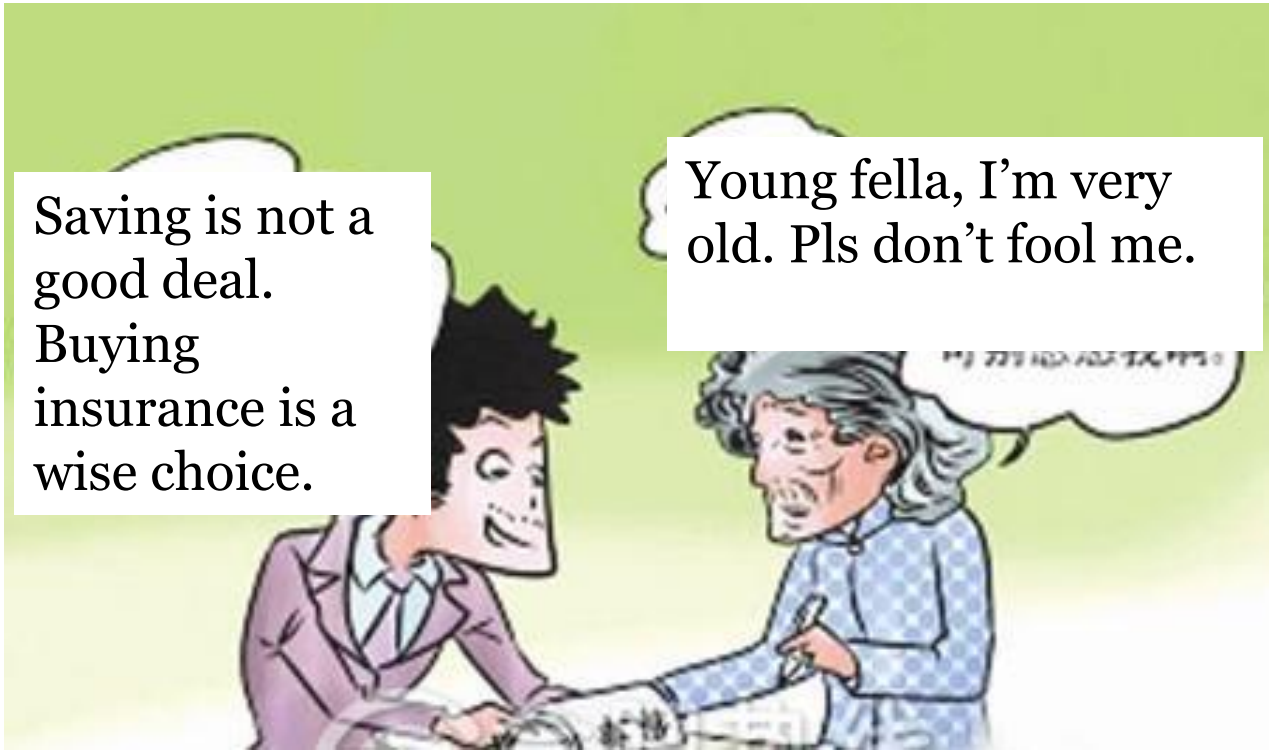
Thanks for your attention!

Distribution of household attitude towards insurance products (CHFS)

Households in China have a clear disbelief in insurance products (probably due to lack of knowledge)



- Only 33.9% of the households in the survey trust insurance products



Baseline regression results (CHFS)

	ins_hh (1)	*ins_hh* (2)	*ins_hh* (3)	*ins_hh* (4)	*Ln_Pre* (5)	*Ln_Pre* (6)	*Ln_Pre* (7)	*Ln_Pre* (8)
Atten	0.021***				0.170***			
	(9.75)				(8.47)			
Grade		0.019***				0.158***		
		(6.43)				(5.93)		
Class			0.047***				0.333***	
			(5.98)				(4.70)	
Index				0.040***				0.349***
				(13.42)				(12.63)

Baseline regression results (CFPS)

	ins_hh (1)	*ins_hh* (2)	*ins_hh* (3)	*ins_hh* (4)	*Ln_Pre* (5)	*Ln_Pre* (6)	*Ln_Pre* (7)	*Ln_Pre* (8)
fk_score_b	0.029***				0.208***			
	(5.54)				(5.41)			
fk_score_a		0.022***				0.164***		
		(5.35)				(5.37)		
fb_score			0.020***				0.152***	
			(5.37)				(5.64)	
fa_score				0.005**				0.038**
				(2.11)				(2.17)