家庭金融简介

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1. Household Finance
   - Campbell (2006)
   - NBER Household Finance Working Group

2. **中国家庭金融的基本特征**
   - Cooper & Zhu (2017): Household Finance in China
   - **中国家庭金融的基本特征**

3. Dimmock et al. (2016)
   - Ambiguity Aversion and Household Portfolio Choice Puzzles

4. Korkmaz et al. (2018)
   - Does Financial Knowledge Alleviate Risk Attitude and Risk Behavior Inconsistency

5. Take Away

Four Research Fields

- Asset Pricing: how asset prices are determined in capital markets and how average asset returns reflect risk.
- Corporate Finance: how business enterprises use financial instruments to further the interests of their owners, and in particular to resolve agency problems.
- Household Finance: how households use financial instruments to attain their objectives.
- Behavioral Finance: the study of the influence of psychology on the behavior of investors or financial analysts.

- Explore a field, household finance, John Y. Campbell
- Teaching and research are presently organized primarily around the traditional fields of asset pricing and corporate finance.
- Behavioral Finance, Richard Thaler

Who is John Y. Campbell?

- John Y. Campbell is the Morton L. and Carole S. Olshan Professor of Economics at Harvard University, where he has taught since 1994.

- Campbell delivered the Ely Lecture to the American Economic Association in 2016 and served as President of the American Finance Association in 2005. He is a Research Associate and former Director of the Program in Asset Pricing at the National Bureau of Economic Research, a Fellow of the Econometric Society and the American Academy of Arts and Sciences, a Corresponding Fellow of the British Academy and Honorary Fellow of Corpus Christi College, Oxford, and holds honorary doctorates from BI Norwegian Business School, the University of Maastricht, the University of Paris Dauphine, and Copenhagen Business School.

John Y. Campbell

- The winner of 2017 Nobel prize in economics
- Richard H. Thaler is an American economist and the Charles R. Walgreen Distinguished Service Professor of Behavioral Science and Economics at the University of Chicago Booth School of Business. In 2015, Thaler was president of the American Economic Association.

- Measurement
- Modeling

- Households tend to guard their financial privacy jealously
- Many households have complicated finances, with multiple accounts at different financial institutions that have different tax status and include both mutual funds and individual stocks and bonds.

Five Characteristics of the Ideal Data Set

- It would cover a representative sample of the entire population.
- For each household the data set would measure both total wealth and an exhaustive breakdown of wealth into relevant categories.
- To distinguish among asset classes
- The data would be reported with a high level of accuracy.
- The data set would follow households over time; that is, it would be a panel data set rather than a series of cross-sections.

- The U.S. survey with the best data on financial wealth is generally thought to be the Survey of Consumer Finances (SCF).
- In China, China Household Finance Survey (CHFS)

- Household decision problems involve many complications that are neglected by standard textbooks.
- Plan their financial strategies over a lifetime rather than over a single short period
- Human capital, which is nontradable
- Houses are long-term assets that deliver a stream of housing services to their owners; in this sense they are like long-term bonds and can be used to hedge changes in the relative price of housing and nonhousing consumption.

- Founded in 1920
- a private, non-profit, non-partisan organization
- Twenty-nine Nobel Price winners in Economics, and thirteen past chairs of the President's Council of Economic Advisers
- more than 1,400 professors of economics and business
- Find more info: nber.org

Working Groups at the NBER

- Behavioral Finance
- Chinese Economy
- Cohort Studies
- Economics of Crime
- Entrepreneurship
- Household Finance
- Innovation Policy
- Insurance
- Market Design
- Organizational Economics
- Personnel Economics
- Risks of Financial Institutions
- Urban Economics

- established in 2009
- Amid calls for greater attention to the policies and market institutions that affect household financial choices

Stephen P. Zeldes

Economics Division, Columbia Business School
Benjamin M. Rosen Professor of Finance and Economics

WELCOME

Stephen P. Zeldes is the Benjamin M. Rosen Professor of Economics and Finance at Columbia University's Graduate School of Business. He served as chair of the school's Finance and Economics division from 2014-17.

In his research, Professor Zeldes has examined a wide range of applied issues in both macroeconomics and household finance, including saving behavior, social security reform, pension policy, retirement account portfolio choices, and annuitization and retirement security. His research has been published in the leading academic journals. Professor Zeldes' teaching includes courses in macroeconomics, an interdisciplinary course titled "The Psychology and Economics of Consumer Finance," and a class titled "FinTech: Consumer Financial Services." In 2012, he was a recipient of the Dean's Award for Teaching Excellence in a Core Course, and in 2013 he received the Dean's Award for Innovation in the Curriculum.

Professor Zeldes is a Research Associate and co-director of the Working Group on Household Finance at the National Bureau of Economic Research. He is also a member of the Advisory Board of the Pension Research Council, a fellow at the TIAA-CREF Institute, and a member of the New York City Retirement Security Study Group (formed by the Comptroller in 2015). Prior to joining the Columbia faculty in 1996, Zeldes was a Professor at the Wharton School of the University of Pennsylvania. He received his PhD in economics from MIT in 1984 and his bachelor's degree in economics and applied mathematics from Brown University in 1978.

Stephen Zeldes, Director

"The Household Finance Working Group examines topics that relate to household saving, portfolio behavior, borrowing decisions, and investment choices. The Group is concerned with conceptual models that explain household financial decisions, with empirical research on the household behavior on a range of financial margins, and with analyzing the influence of various public and private policies on household financial choices."

- Financial Education
- Financial Advice
- Retirement Saving
- Borrowing
- Social Insurance

A large and growing literature has documented widespread consumer behaviors, often labeled financial mistakes, which involve households paying more than they need to for some services, or purchasing services that do not appear to serve their needs. An oft-cited antidote to these "mistakes" is financial education. But initial research on financial education largely documented correlations rather than causal effects. More recent research takes seriously the problems of identification.

- [Skimmyhorn, 2016] uses administrative data matched with credit bureau records to evaluate the effects of a large natural experiment, a mandatory personal financial management course adopted by the U.S. Army in 2007–08 for all newly enlisted personnel. The paper exploits the staggered rollout of the program across military bases to rule out time effects as a factor that might confound the results. Soldiers who joined the Army subsequent to the course's introduction have retirement savings plan participation and contribution rates roughly double those of soldiers who enlisted just prior to introduction of the course. They also have lower credit card balances, auto loan balances, and unpaid debts.

- [Bruhn et al., 2016] evaluate a randomized controlled trial designed to provide evidence on the impact of a newly designed, comprehensive financial education program in Brazilian high schools. The 17-month program integrates financial education into the math, science, history, and language curriculum of almost 900 high schools and includes new textbooks and extensive teacher training. The program leads to improved levels of student financial proficiency, increased saving, and better budgeting behavior, but also results in higher use of expensive credit for consumer purchases. The program also has some positive spillover effects in the financial behaviors of students' parents.

Financial Advice

Another antidote to consumer financial mistakes is the provision of financial advice. Understanding whether such advice improves outcomes is a recent, active area of ongoing research. One potential problem is that some advisers may have conflicts of interest due to the incentives built into their compensation. Two recent audit studies, employing actors posing as consumers seeking financial advice, shed light on the nature of these conflicts.

- [Anagol et al., 2017], examine the quality of advice provided by life insurance agents in India. They find that agents maximize their own welfare by recommending products with high commissions, instead of less-expensive products that can deliver the same, or very similar, benefits. They also find that agents cater to the beliefs of uninformed consumers even when those beliefs are wrong, presumably because doing so increases the likelihood of retaining those customers.

Financial Advice

- [Mullainathan et al., 2012], examine the investment advice provided by financial advisers who interact with the broad population of retail investors - as distinguished from high net-worth households - in the United States. They examine a set of advisers who are paid based on the fees they generate, and they too find that advisers often reinforce the biases of potential clients when doing so is in the advisers' interests. For example, many advisers in their study recommended actively managed portfolios with higher fees and commissions for the adviser rather than lower-cost index funds with lower associated commissions.

- [Egan et al., 2019] evaluate the prevalence of misconduct among financial advisers in the United States. Using data on customer filings and regulatory actions against U.S. broker-dealers over a 10-year period, they document that 7 percent of broker dealers have a record of misconduct, and that prior offenders are five times more likely to face new allegations of misconduct than the average adviser.

- [Egan et al., 2019] also evaluate the implications of misconduct. Half of the advisers accused of misconduct lose their jobs, although many are subsequently rehired by other firms. The firms that hire these previously dismissed advisers have higher firm-level rates of misconduct. Misconduct is also more likely in firms that primarily serve retail customers in counties with older, less-educated, higher-income populations. This leads to a segmented market in which some firms cater to unsophisticated consumers because they can get away with higher levels of misconduct, while others discipline misconduct to retain a reputation that will attract financially sophisticated consumers.

- These findings raise the question of how investors assess the advice quality and trustworthiness of financial advisers.

Financial Advice

- [Agnew et al., 2016] explore this question in a multi-round incentivized survey experiment in which subjects were given conflicting recommendations from two advisers regarding a financial choice. Subjects are more likely to follow advice that is not in their best interest in later rounds if they received advice that was in their interest in earlier rounds. They are more likely to follow advice if the adviser displays a credential, even though many cannot accurately assess whether a credential is legitimate or fake. They are also more likely to accept bad advice when the quality of the advice is more difficult to assess. These findings suggest that it may be relatively easy for ill-intentioned financial advisers to dupe unwitting clients.

Retirement Saving

One approach to increasing retirement savings that does not rely on either financial literacy or financial advice is automatic enrollment, which could be mandatory or allow an option to opt out of savings plan participation. There is compelling evidence that such an approach increases both savings plan participation and asset accumulation in the accounts into which individuals are automatically enrolled. One important question not answered in the early research on this topic is whether the savings generated are new savings, or whether they are offset by changes elsewhere on the household balance sheet. More recent research has tried to address this important question.

- Using data from Denmark, [Chetty et al., 2014] examine the impact of changes in compulsory pension plan contributions on total household savings.When individuals change jobs in Denmark, their new employer may have a compulsory pension plan contribution rate that is higher or lower than their previous employer. The researchers find that individuals offset only 20 percent of these compulsory saving changes by adjusting their savings elsewhere, both in the short- and longer term.

Retirement Saving

- [Beshears et al., 2019] examine another potential margin of adjustment: household debt. They study the impact of the adoption of automatic enrollment into the Thrift Savings Plan for U.S. Army civilian employees, and find that automatic enrollment increases savings while generating no statistically significant changes in credit card or other forms of non-collateralized debt at any time horizon studied. They do, however, find modest increases in auto loan and first-mortgage debt at horizons of two to four years. Because auto and mortgage debt originations coincide with asset purchases, it is unclear whether increases in these liabilities imply decreases in net worth.

- Linkages between different pieces of the household balance sheet have also been examined in the context of the large and plausibly unanticipated changes in consumers' monthly mortgage payments resulting from the large reduction in interest rates that occurred in the years following the global financial crisis. Using matched mortgage and credit bureau data, [Keys et al., 2014] show that, on average, consumers with nonconforming adjustable rate mortgages saw their monthly payments fall by $940, a decline of 53 percent. Those with conforming adjustable rate mortgages experienced a $280 average monthly reduction - 23 percent - when interest rates were reset. They then evaluate how consumers respond to these reductions.

Consumer Spending Response to Reduced Mortgage Payments
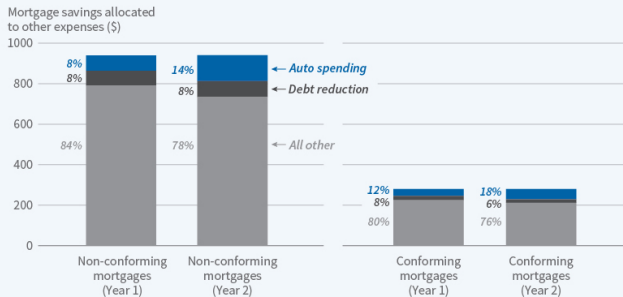
A conforming mortgage is one that conforms to GSE (Fannie Mae and Freddie Mac) guidelines

Source: Di Maggio, Kermani, Keys, Piskorski, Ramcharan, Seru, and Yao, "Interest Rate Pass-Through: Mortgage Rates, Household Consumption, and Voluntary Deleveraging," *American Economic Review*, 107(11), 2017, pp. 3550–88

- [Keys et al., 2014] measure this by the assumption of new auto debt, and find that this single source of additional consumption accounts for 8 to 18 percent of the liquidity generated by consumers' lower mortgage payments. This consumption response is larger for households that are likely more constrained, namely, those with higher loan-to-value ratios and lower incomes. Consumers also increase their voluntary prepayments of mortgage debt, which accounts for 6 to 8 percent of the additional liquidity. This deleveraging response is smaller for households that are more constrained. The reduction in mortgage payments also leads to a substantial decline in the mortgage default rate, consistent with the results of another study by [Fuster and Willen, 2017].

- What all this points to is that reductions in required mortgage payments affected aggregate economic outcomes. Areas with a higher concentration of adjustable rate mortgages saw a relative decrease in default rates for consumer debt, lower rates of house price decline, increases in auto sales, and relative improvements in employment in the non-tradable sector. These results highlight the importance of mortgage debt contract rigidity in the transmission of monetary policy to the real economy.

- Social insurance is an important source of financial protection for households in a variety of financial circumstances. Two recent studies examine the impact of a particularly important source of insurance - Medicaid - on the financial position of low-income households.

- [Gross and Notowidigdo, 2011] examine the effects of state Medicaid expansions between 1992 and 2004. They find that out-of-pocket medical costs are an important factor in roughly one-quarter of the personal bankruptcy filings of low-income households. As a result, a 10 percentage point increase in Medicaid eligibility, which by design reduces out-of-pocket medical costs, also reduces personal bankruptcy filings by 8 percent.

- [Brevoort et al., 2017] examine the effects of the Medicaid expansion provision of the Affordable Care Act (ACA). They estimate that increased health insurance coverage has a number of beneficial effects on eligible households: a $3.4 billion reduction in unpaid medical bills sent to collection over a two-year period, higher credit scores, and better terms on the credit offered to households. Overall, they calculate that the indirect financial benefits of Medicaid in terms of better credit market outcomes are of a roughly similar magnitude to the direct reduction in out-of-pocket medical expenditures.

- [Hsu et al., 2014] examine the financial effects of another important form of social protection - unemployment insurance (UI). They exploit variation in the generosity of UI across states and over time to examine its impact on housing market outcomes for households that did and did not experience a layoff. They find that a $3,600 increase in the maximum annual benefit amount, equal to the cross-state standard deviation of benefits in 2010, reduces both mortgage delinquency and foreclosure rates by about 13 percent among those who experienced a layoff.

Social Insurance

- Using these estimates, [Hsu et al., 2014] calculate that the UI expansions that took effect during the global financial crisis prevented 1.3 million foreclosures between 2008 and 2013, over 60 percent more than the number of foreclosures prevented by the Home Affordable Modification Program and the Home Affordable Refinance Program combined. UI also moderated the decline in house prices experienced in areas with rising unemployment. They conclude that UI acts as an automatic stabilizer for both aggregate consumption and for the housing market.

Find more info: http://www.nber.org/workinggroups/papers/HF.html

Cooper & Zhu (2017): Household Finance in China

"This paper uses a lifecycle model to study household finance in China, focusing on the high savings rate, the low stock market participation rate and the low share of stocks in wealth. We control for important regime changes in China in the estimation of structural parameters, and examine their impacts on household finance patterns. Relative to the US, the distinctive financial choices of households in China are driven by institutional factors, such as labor market risks and costs of asset market participation, as well as by differences in preferences. Specifically, large stock market participation and adjustment costs along with high stock market volatility in China lead to the relatively low stock market participation rate and the low share of stocks in wealth conditional on participation, but they contribute little to the high savings rate. The high savings rate in China is driven mainly by high labor market risks and the patience of households. Given the estimated differences between China and the US in preferences, the model predicts that households in China would continue to save more than their US counterparts even if institutional differences disappear."

Gini coefficient
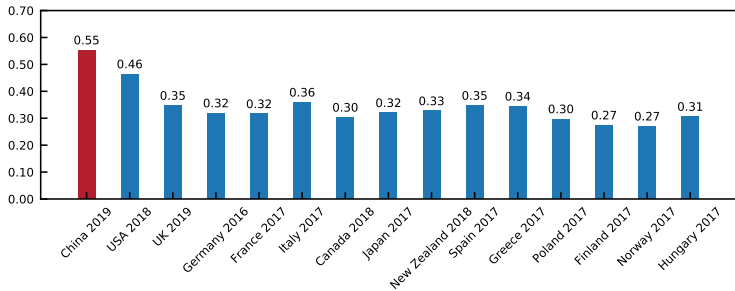
- **中国家庭消费占 GDP 的比重长期偏低**

Private Consumption of GDP (%)
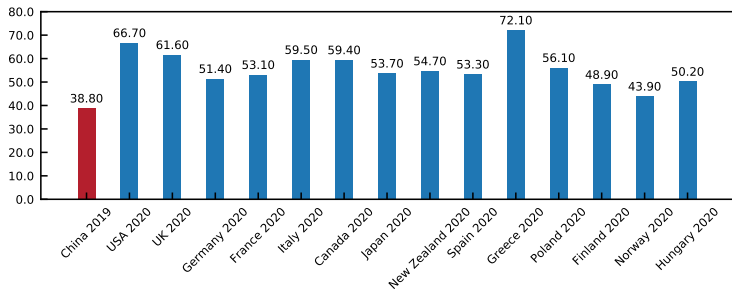
- 家庭储蓄率逐年上升
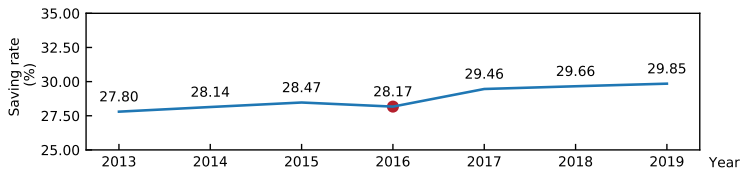
中国家庭储蓄率高

Saving rate (%)
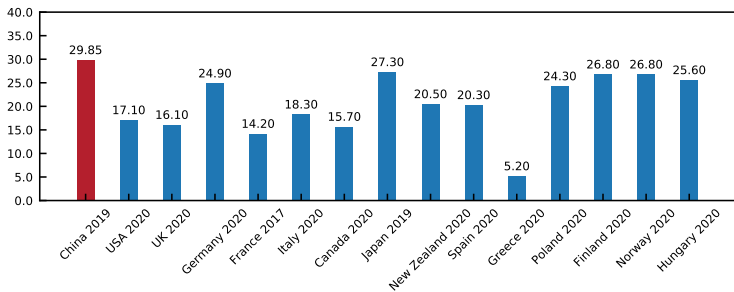
- 2017 年，北京为 81.9%，天津为 89.9%，上海为 89.3%，一线城市占比更高
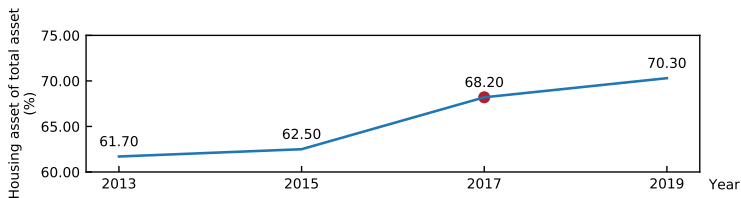
- ## 中国家庭储蓄率高
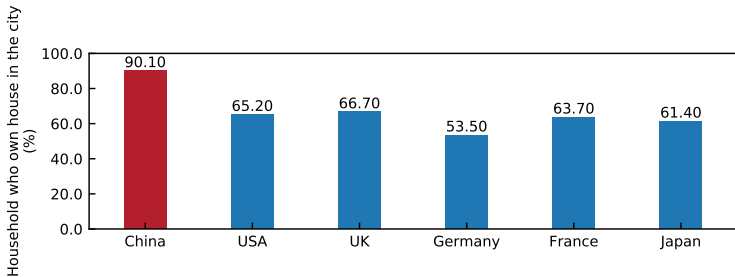
● 家庭金融市场参与低
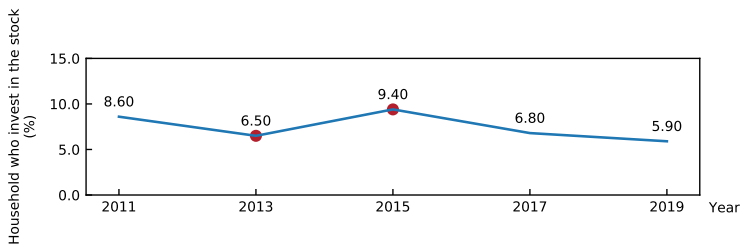
- **中国家庭金融资产占比低**
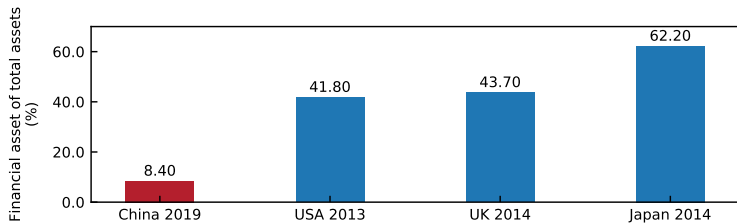
- 央行：2020 年 8 月，家庭贷款余额 59.78 万亿，住户消费贷款 46.87 万亿按照 4.3 亿个家庭计算，户均贷款余额 14 万，户均消费贷款余额 11 万
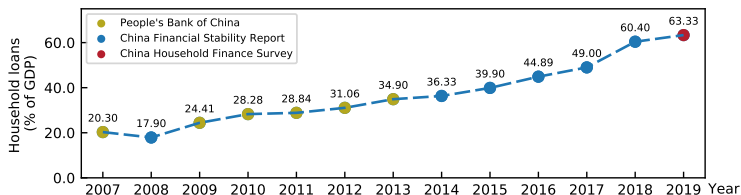
Paper Info

[Dimmock et al., 2016]

Ambiguity aversion and household portfolio choice puzzles: Empirical evidence☆

CrossMark

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Welcome to the ALP Data Pages

The ALP is a nationally representative, probability-based panel of over 6000 members ages 18 and older who are regularly interviewed over the internet for research purposes. **All data are available for free to researchers**.

The ALP is also a **service for researchers to field their own questionnaires and experiments**. We will work with you to program, field, and monitor your survey. Combine your data with over 400 previously collected surveys for richer analysis.

Your Survey in the ALP
Ask your questions in the ALP to get the data you want.

Data for Researchers
Data from over 460 surveys is available for free to researchers.

Panel Composition
Learn how the panel was recruited over time.

Projects
Learn about key longitudinal studies.

Papers
Papers and other publications using ALP data.

MMIC™ and EgoWeb
Capabilities of the survey technologies that power the ALP

✓ Measure ambiguity preferences using custom-designed questions.

✓ Test the relation between ambiguity aversion and household portfolio choice puzzles.

Findings

- ✓ Most Americans are ambiguity-averse.
- ✓ Ambiguity aversion is negatively associated with stock market participation and with the fraction of financial assets allocated to equities.
- ✓ Ambiguity aversion is negatively associated with foreign stock ownership, even among stock market participants, and positively associated with own-company stock ownership.
- ✓ The relation between ambiguity aversion and household portfolio choice patterns is stronger for respondents with lower self-assessed stock market knowledge.
- ✓ Conditional on holding stocks prior to the recent financial crisis, more ambiguity-averse households were more likely to actively sell equities during the crisis.

Introduciton

- Risk & Ambiguity.
- An internet survey module designed to elicit ambiguity aversion and fielded it on more than three thousand respondents in ALP.
- Ask respondents to choose between a lottery with known probabilities (the drawing of a ball from a box with 100 colored balls in known proportions) versus a lottery with unknown probabilities. Vary the proportions of colored balls in the lottery with known probabilities, to measure individual respondents' ambiguity aversion.
- All respondents were eligible to win real monetary incentives ($23,850 to 1,590 of the 3,258 respondents).

You can win additional money on top of your regular payment for answering the survey, by answering the next questions.

You will be asked to choose between two boxes, Box K and Box U. Each box contains 100 balls of different colors. After you choose a box, one ball is drawn out of that box. If the ball is the right color, you could win $15. There are no right or wrong answers for these questions. If you feel both boxes are equally attractive, please choose Indifferent.

After completing the survey, one of the questions you answered will be selected randomly by the computer and played for real money. Your winnings will be based on the choices you made.

Next>>

A Choice between Box K and Box U

In the next question you can choose either Box K or Box U. Both hold 100 balls which can either be purple or orange.

For Box K, the exact mix of purple balls and orange balls is given below.
Box U also holds purple and orange balls, but the mix is unknown.

In other words, both boxes hold 100 balls with two different colors (purple and orange). The mix of purple and orange balls is known for Box K and unknown for Box U.
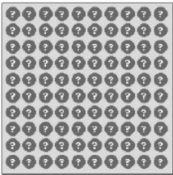
One ball will be drawn at random from the box you choose. You will win $15 if a purple ball is drawn.

Box K

Chance	You win
25%	$15
75%	$0

Box U

Chance	You win
?%	$15
?%	$0

○ Box K   ○ Indifferent   ○ Box U

[Next>>]

Panel A: Probability of Winning for Box K and Transitions

Question Round	Purple balls in Box K (p)	Orange balls (100 - p)	Next round after response		
			Box K	Box U	Indifferent
Q1a	50	50	Q1b	Q1i	stop
Q1b	25	75	Q1c	Q1f	stop
Q1c	12	88	Q1d	Q1e	stop
Q1d	6	94	stop	stop	stop
Q1e	18	82	stop	stop	stop
Q1f	38	62	Q1g	Q1h	stop
Q1g	32	68	stop	stop	stop
Q1h	44	56	stop	stop	stop
Q1i	75	25	Q1j	Q1m	stop
Q1j	62	38	Q1k	Q1l	stop
Q1k	56	44	stop	stop	stop
Q1l	68	32	stop	stop	stop
Q1m	88	12	stop	stop	stop

Panel B: Outcome Paths

Response	q	Response	q	Response	q
KKKK	3	KUKI	32	UKKU	59
KKKI	6	KUKU	35	UKI	62
KKKU	9	KUI	38	UKUK	65
KKI	12	KUUK	41	UKUI	68
KKUK	15	KUUI	44	UKUU	71.5
KKUI	18	KUUU	47	UI	75
KKUU	21.5	I	50	UUK	81.5
KI	25	UKKK	53	UUI	88
KUKK	28.5	UKKI	56	UUU	94

A Key Appeal of This Approach

- Matching probabilities measure ambiguity aversion relative to risk aversion, because the alternative to the ambiguous choice is a risky choice, not a certain outcome.

- Within-subject comparison make sure that matching probabilities capture only differential preferences for ambiguity relative to risk.

- Ambiguity-neutral probability of the ambiguous lottery is 50%.
- Hence, q denotes the matching probability and Ambiguity Aversion$=50\% - $q.
- Positive values of this measure indicate ambiguity aversion, zero indicates ambiguity neutrality, and negative values indicate ambiguity-seeking.

Two Additional Measures of Ambiguity Aversion

- The first is simply an indicator variable equal to one if the respondent shows ambiguity aversion for the first round of the question (i.e., if he selects Box K in the first round).

- The second is the rank transformation of the **Ambiguity Aversion** measure, with zero indicating the lowest level of ambiguity aversion and one the highest.

- The ALP consists of several thousand households that regularly answer Internet surveys.
- Ambiguity survey was fielded in mid-March 2012, and the survey was closed in mid-April 2012.
- Use variables derived from other ALP surveys.

Variables in the American Life Panel Survey Module

Variable name	Definition
Stock Ownership	Indicator that respondent holds equities in his personal portfolio (stocks or stock mutual funds)
Fraction Allocated to Stocks	Equity holdings as a % of financial assets (checking, saving, money market, bonds, CDs, mutual funds, and stocks)
Foreign Stock Ownership	Indicator that respondent holds foreign stocks in his personal portfolio
Own-Company Stock Ownership	Indicator that respondent holds his employer's stocks in his personal portfolio
Individual Stock Ownership	Indicator that respondent holds individual stocks in his personal portfolio
Fraction of Equity Allocated to Individual Stocks	Individual stock holdings as a % of assets invested in stocks
Stock Sales during Crisis	Indicator if respondent actively sold stocks during financial crisis
Age	Age in years
Male	Indicator for male
White	Indicator if respondent considers himself primarily White
Hispanic	Indicator if respondent considers himself primarily Hispanic
Married	Indicator if respondent is married or has a partner
Number of Children	Number of living children
Health	Self-reported health status ranging from 0 ("Poor") to 4 ("Excellent")
LT High School	Indicator if respondent had less than a high school degree
High School Graduate	Indicator if respondent completed high school but not college
College+	Indicator if respondent completed college
Employed	Indicator if respondent is employed
Family Income	Total income for all household members older than 15, including from jobs, business, farm, rental, pension benefits, dividends, interest, social security, and other income
Wealth	The sum of net financial wealth, net housing assets, and imputed social security wealth using respondent self-reported claim ages, actual or estimated monthly benefits, and cohort life tables
Defined Contribution	Indicator if respondent has a defined contribution pension plan
Defined Benefit	Indicator if respondent has a defined benefit pension plan
Financial Literacy	Number of financial literacy questions answered correctly (out of 3 total; see Online Appendix C)
Trust	Ranges from 0 to 5; 0 corresponds to "most people can be trusted" and 5 corresponds to "you can't be too careful"
Risk Aversion	Estimated coefficient of risk aversion based on lottery questions, >0 if risk averse, =0 if risk neutral, <0 if risk seeking
Question Order	Indicator if subject answered the risk aversion question before the ambiguity questions (the question order was randomized)

Summary Statistics for Outcome and Control Variables

Variable	Mean	Standard deviation	Minimum	Median	Maximum	N
Stock Ownership (%)	0.23	0.42	0	0	1	3,025
Fraction Allocated to Stocks (%)	0.12	0.27	0	0	1	3,025
Foreign Stock Ownership (%)	0.13	0.34	0	0	1	799
Own-Company Stock Ownership (%)	0.05	0.22	0	0	1	670
Individual Stock Ownership (%)	0.17	0.38	0	0	1	2,757
Fraction Allocated to Individual Stocks Conditional (%)	0.42	0.44	0	0.24	1	321
Stock Sales during the Financial Crisis (%)	0.07	0.25	0	0	1	528
Age	46.38	15.20	18	48	70	3,070
Male (%)	0.48	0.50	0	0	1	3,070
White (%)	0.81	0.39	0	1	1	3,066
Hispanic (%)	0.18	0.38	0	0	1	3,069
Married (%)	0.64	0.48	0	1	1	2,695
Number of Children	1.67	1.62	0	2	13	3,024
Health	2.48	0.93	0	3	4	2,969
LT High School (%)	0.10	0.29	0	0	1	3,069
High School (%)	0.34	0.47	0	0	1	3,069
College+ (%)	0.56	0.50	0	1	1	3,069
Employed (%)	0.49	0.50	0	0	1	3,068
Family Income ($)	69,295	69,774	2,500	55,000	400,000	3,061
Wealth ($)	317,076	584,485	−88,743	112,928	4,188,110	2,969
Defined Contribution	0.47	0.50	0	0	1	2,991
Defined Benefit	0.10	0.31	0	0	1	2,991
Financial Literacy	2.18	0.93	0	2	3	3,070
Trust	3.20	1.41	0	3	5	3,035
Risk Aversion	0.34	0.45	−0.50	0.41	0.98	3,036
Question Order	0.50	0.50	0	1	1	3,070

Why Control for Risk Aversion?

- To ensure that ambiguity aversion variable captures a distinct component of preferences, separate from risk aversion.

- Ambiguity aversion and risk aversion could be correlated, in which case ambiguity attitudes could provide little incremental information about preferences.

Ambiguity Aversion in the US Population

Panel A: Proportion of respondents ambiguity-averse, -neutral, and -seeking	
Measure	%
Ambiguity-averse	0.52
Ambiguity-neutral	0.10
Ambiguity-seeking	0.38

Panel B: Summary statistics ambiguity aversion measure					
Measure	Mean	Standard deviation	Minimum	Median	Maximum
Ambiguity Aversion	0.018	0.213	−0.440	0.030	0.470

Panel C: Check question responses		
Question	Not inconsistent	Inconsistent
Check question 1	69.6%	30.4%
Check question 2	86.0%	14.0%

Panel D: Bivariate correlations with ambiguity aversion measure	
Educational Level	Correlation
High School Graduate	−0.05***
College+	0.07***
Financial Literacy	0.04**
Self-Assessed Stock Market Knowledge	0.03
Errors on Check	−0.16***

Variable	(1)	(2)	(3)
Ambiguity Aversion	−0.020**		
	[0.01]		
Ambiguity Aversion Dummy		−0.039**	
		[0.02]	
Ambiguity Aversion Rank			−0.021**
			[0.01]

Model	(1)	(2)	(3)	(4)
Panel A: Results for Ambiguity Aversion				
Ambiguity Aversion	−0.020**	−0.025*	−0.037**	−0.047**
	[0.01]	[0.01]	[0.02]	[0.02]
Consistent responses only	No	Yes	No	Yes
Financial assets ≥$500	No	No	Yes	Yes
Controls and constant	Yes	Yes	Yes	Yes
N	2,943	1,746	1,881	1,199
Panel B: Results for Ambiguity Aversion Dummy				
Ambiguity Aversion Dummy	−0.039**	−0.031	−0.072***	−0.058*
	[0.02]	[0.02]	[0.03]	[0.03]
Consistent responses only	No	Yes	No	Yes
Financial assets ≥$500	No	No	Yes	Yes
Controls and constant	Yes	Yes	Yes	Yes
N	2,943	1,746	1,881	1,199
Panel C: Results for Ambiguity Aversion Rank				
Ambiguity Aversion Rank	−0.021**	−0.023*	−0.039***	−0.043**
	[0.01]	[0.01]	[0.01]	[0.02]
Consistent responses only	No	Yes	No	Yes
Financial assets ≥$500	No	No	Yes	Yes
Controls and constant	Yes	Yes	Yes	Yes
N	2,943	1,746	1,881	1,199

Ambiguity Aversion and the Fraction of Financial Assets Allocated to Stocks

Model	(1)	(2)
Ambiguity Aversion	−0.079**	−0.040*
	[0.03]	[0.02]
Equity ownership >0 only	No	Yes
Controls and constant	Yes	Yes
N	2,943	731

Ambiguity Aversion: Foreign Stocks and Own-company Stock Ownership

Model	Foreign stock ownership		Own-company stock ownership	
	(1)	(2)	(3)	(4)
Ambiguity Aversion	−0.026**	−0.080**	0.014*	0.117**
	[0.01]	[0.03]	[0.01]	[0.05]
Equity ownership >0 only	No	Yes	No	Yes
Controls and constant	Yes	Yes	Yes	Yes
N	779	258	664	155

Model	No interaction (1)	Self-assessed knowledge (2)	Financial literacy (3)
Ambiguity Aversion	−0.020**		
	[0.01]		
AA: low stock market competence		−0.046***	−0.033**
		[0.02]	[0.01]
AA: high stock market competence		−0.012	−0.009
		[0.01]	[0.01]
Stock market competence	0.068***	0.185***	0.124***
	[0.01]	[0.02]	[0.02]
Controls and constant	Yes	Yes	Yes
N	2,943	2,943	2,943

Ambiguity Aversion and Under-diversification

Model	Individual stock ownership			Fraction of equity in individual stocks		
	No interaction (1)	Self-assessed stock market knowledge (2)	Financial literacy (3)	No interaction (4)	Self-assessed stock market knowledge (5)	Financial literacy (6)
Ambiguity Aversion	−0.087***			−0.115***		
	[0.02]			[0.01]		
AA: low stock market competence		−0.017	−0.044		0.459***	0.105***
		[0.06]	[0.04]		[0.04]	[0.02]
AA: high stock market competence		−0.096***	−0.100***		−0.134***	−0.171***
		[0.02]	[0.03]		[0.01]	[0.01]
Stock market competence	−0.011	0.063	−0.037	0.051	−0.048	0.043
	[0.03]	[0.07]	[0.05]	[0.04]	[0.07]	[0.06]
Controls and constant	Yes	Yes	Yes	Yes	Yes	Yes
N	701	701	701	319	319	319

Ambiguity Aversion and Reactions to the Financial Crisis

Model	(1)
Ambiguity Aversion	0.045***
	[0.01]
Controls and constant	Yes
N	524

- Strong heterogeneity in ambiguity attitudes in the US population, with 52% being ambiguity-averse and 38% ambiguity-seeking. Such heterogeneity could moderate the effect on asset prices.
- People with high financial literacy own about 90% of all financial wealth. Given relation between ambiguity aversion and stock market participation is not significant for the financially literate, this could dampen the effect of ambiguity aversion on the equity premium.

Conclusion

- ✓ Most Americans are ambiguity-averse.
- ✓ Ambiguity aversion is negatively associated with stock market participation and with the fraction of financial assets allocated to equities.
- ✓ Ambiguity aversion is negatively associated with foreign stock ownership, even among stock market participants, and positively associated with own-company stock ownership.
- ✓ The relation between ambiguity aversion and household portfolio choice patterns is stronger for respondents with lower self-assessed stock market knowledge.
- ✓ Conditional on holding stocks prior to the recent financial crisis, more ambiguity-averse households were more likely to actively sell equities during the crisis.

- Inconsistency between a beginning elementary school teacher's mathematics beliefs and teaching practice
- Job attitudes and behaviors
- Will you accept members of Chinese race as your guest?
  81 Restaurants: 92% No
  47 Hotels: 91% No

- 2011, 2013, 2015, 2017, (2019)
- 40011; 127012
- Household income, expenses, assets, liabilities, insurance, securities, demographics, employment, and payment history

China Household Finance Survey

Table: Description of the CHFS Data

Panel A: Sample Coverage

Year	Province	City	County	Community	Household	Individual
2011	25		80	320	8,438	29,342
2013	29	168	268	1,021	28,142	97,916
2015	29	172	351	1,362	37,289	133,183
2017	29	172	355	1,417	40,011	127,012

Panel B: Repeat Surveys

	2011	2013	2015	2017
2011	8,438	6,846	5,753	4,752
2013		28,142	21,775	16,836
2015			37,289	26,842
2017				40,011

Risk attitude and risk behavior inconsistency: 61.95%.

Definition

Risk attitude: 50% chance for nothing or 100% shot.
Risk behavior: holding stock, fund, financial products, bonds etc.

- [Sitkin and Pablo, 1992] posit that risk propensity is the major determinant of risk behavior.
- [Sitkin and Weingart, 1995] provide support for the [Sitkin and Pablo, 1992] model in which risk perception and risk propensity are key mediators.

Literature: Financial Knowledge

- The average household is not financially literate enough to make good financial decisions [Hung et al., 2009, Almenberg and Widmark, 2011, Van Rooij et al., 2011, Lusardi, 2012].

- Financial knowledge could help investors make better decisions [Lusardi and Mitchell, 2007, Van Rooij et al., 2011].

Table: Variable Definitions

Variable	Definition
ICPref&Prop1	1: risk preference without risk propensity
ICPref&Prop2	1: risk-averse with risk propensity
ICPref&Prop	1: ICPref&Prop1 or ICPref&Prop2
ICPref&Beh1	1: risk preference without risky behavior
ICPref&Beh2	1: risk-averse with risky behavior
ICPref&Beh	1: ICPref&Beh1 or ICPref&Beh2
ICProp&Beh1	1: risk propensity without risky behavior
ICProp&Beh2	1: no risk propensity with risky behavior
ICProp&Beh	1: ICProp&Beh1 or ICProp&Beh2

Table: Mean Comparison Tests

	(1)			(2)		
	Q10	Q1	Diff	Q5	Q1	Diff
Panel A: The inconsistency between risk preference and risk behavior						
ICPref&Beh	0.4475	0.6828	−0.2353***	0.5533	0.6658	−0.1125***
	(0.4974)	(0.4655)	[0.0000]	(0.4972)	(0.4718)	[0.0000]
ICPref&Beh1	0.1249	0.5994	−0.4744***	0.3122	0.6072	−0.2950***
	(0.3307)	(0.4901)	[0.0000]	(0.4634)	(0.4884)	[0.0000]
ICPref&Beh2	0.3225	0.0834	0.2391***	0.2412	0.0586	0.1825***
	(0.4676)	(0.2766)	[0.0000]	(0.4278)	(0.2350)	[0.0000]

Methodology: Mean Comparison Tests

Table: Mean Comparison Tests

	(1)			(2)		
	Q10	Q1	Diff	Q5	Q1	Diff
Panel B: The inconsistency between risk propensity and risk behavior						
ICProp&Beh	0.4256	0.6550	−0.2293***	0.5459	0.6500	−0.1041***
	(0.4946)	(0.4755)	[0.0000]	(0.4979)	(0.4770)	[0.0000]
ICProp&Beh1	0.0701	0.5711	−0.5010***	0.2855	0.5802	−0.2946***
	(0.2553)	(0.4950)	[0.0000]	(0.4517)	(0.4936)	[0.0000]
ICProp&Beh2	0.3556	0.0839	0.2717***	0.2603	0.0698	0.1905***
	(0.4788)	(0.2772)	[0.0000]	(0.4389)	(0.2549)	[0.0000]

Table: Mean Comparison Tests

	(1)			(2)		
	Q10	Q1	Diff	Q5	Q1	Diff
Panel C: Risk behavior						
Risky behavior	0.4600	0.2206	0.2394***	0.4580	0.2018	0.2563***
	(0.4986)	(0.4147)	[0.0000]	(0.4983)	(0.4014)	[0.0000]
Risky behavior: risk-seeking	0.5239	0.2581	0.2659***	0.5243	0.2115	0.3128***
	(0.5001)	(0.4380)	[0.0000]	(0.4996)	(0.4087)	[0.0000]
Risky behavior: risk-averse	0.4373	0.2105	0.2267***	0.4357	0.1993	0.2364***
	(0.4963)	(0.4078)	[0.0000]	(0.4959)	(0.3995)	[0.0000]

Equation 1 is the baseline model we use in our tests. Y_i represents inconsistency variables, whereas X_i represents control variables.

$$Probit(Y_i|X_i) = Probit(\alpha FinancialKnowledge_i + X_i\beta + \varepsilon_i > 0|X_i) \qquad (1)$$

Financial knowledge could alleviate risk attitude and risk behavior inconsistency.

Table: The Impact of Financial Knowledge on the Inconsistency Between Risk Preference and Risk Behavior

	ICPref&Beh		ICPref&Beh1		ICPref&Beh2	
	Probit	Ivprobit	Probit	Ivprobit	Probit	Ivprobit
Financial knowledge	−0.0004***	−0.0197***	−0.0018***	−0.0296***	0.0021***	0.0292***
	(0.0001)	(0.0015)	(0.0001)	(0.0012)	(0.0001)	(0.0017)
Province	control	control	control	control	control	control
Obs	31,432	31,432	28,624	28,624	14,767	14,767
Wald	2,543.73	3,780.58	3,981.72	8,676.90	970.27	2,507.78
Pseudo R^2/R^2	0.0660	0.5901	0.1211	0.5102	0.0830	0.0557
First Stage F		59.45		89.80		17.20
Cragg-Donald F		646.371		593.118		192.344

The inconsistency between risk preference and risk propensity is 7.45%, and the inconsistency between risk propensity and risk behavior is 60.79%.

Figure: **Preference-Propensity-Behavior Chain.** How does financial knowledge work? This figure, based on [Sitkin and Pablo, 1992] and [Sitkin and Weingart, 1995], explains the link between risk preference and risk behavior.

Table: The Impact of Financial Knowledge on the Inconsistency Between Risk Propensity and Risk Behavior

	ICProp&Beh		ICProp&Beh1		ICProp&Beh2	
	Probit	Ivprobit	Probit	Ivprobit	Probit	Ivprobit
Financial knowledge	−0.0002*	−0.0205***	−0.0018***	−0.0312***	0.0022***	0.0294***
	(0.0001)	(0.0015)	(0.0001)	(0.0011)	(0.0001)	(0.0016)
Province	control	control	control	control	control	control
Obs	31,432	31,432	28,361	28,361	15,394	15,394
Wald	2,362.27	3,666.68	3,942.28	9,503.62	1,056.98	2,817.67
Pseudo R^2/R^2	0.0599	0.5631	0.1189	0.4563	0.0840	0.0578
First Stage F		53.60		83.66		18.38
Cragg-Donald F		646.371		582.762		195.696

Financial Knowledge Encourages Risk-taking Behavior

Risk-seeking but do not display risky behavior is 85.59%, and Risk-averse but display risky behaviors is 14.41%.
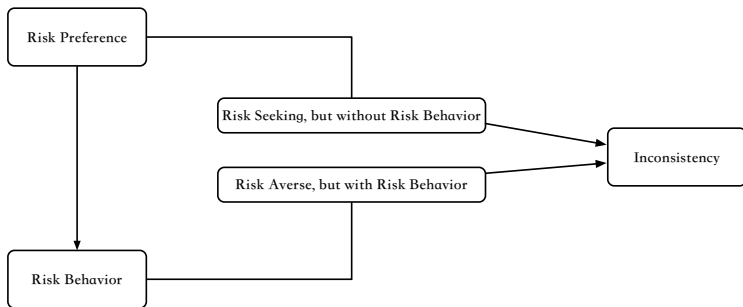

Figure: **Two types of inconsistencies.** This figure is used to demonstrate the two types of inconsistencies that exist between risk preference and risk behavior.

Table: The Impact of Financial Knowledge on Risk Behavior

	Whole sample		Risk-seeking		Risk-averse	
	Probit	Ivprobit	Probit	Ivprobit	Probit	Ivprobit
Financial knowledge	0.0013***	0.0207***	0.0013***	0.0233***	0.0012***	0.0200***
	(0.0001)	(0.0017)	(0.0002)	(0.0036)	(0.0001)	(0.0019)
Province	control	control	control	control	control	control
Obs	31,432	31,432	7,417	7,417	24,015	24,015
Wald	5,334.34	8,224.40	1,502.89	2,372.37	3,793.40	5,840.78
Pseudo R^2/R^2	0.1885	0.3941	0.2105	0.4411	0.1802	0.3748
First Stage F		173.12		46.63		123.74
Cragg-Donald F		646.371		123.196		520.527

Robustness Tests

- Education as a Proxy for Financial Knowledge
- Alternative Measure for Financial Knowledge: Right Ratio
- Using an Age Threshold

Conclusion

- Financial knowledge helps alleviate the inconsistency between risk preference and risk behavior.
- Propensity plays a significant role in the link between risk preference and risk behavior.
- Financial knowledge encourages risky behavior.

Take Away

- Compbell, Thaler, Zeldes
- Household Finance: how households use financial instruments to attain their objectives.
- Challenges: Measurement and Modeling
- the National Bureau of Economic Research, Household Finance Working Group
- Financial Education, Financial Advice, Retirement Saving, Borrowing, Social Insureance
- nber.org
- **中国家庭金融基本特征：收入差距大、低消费、高储蓄、住房资产占比高、金融市场参与低、杠杆率高**

谢谢！

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