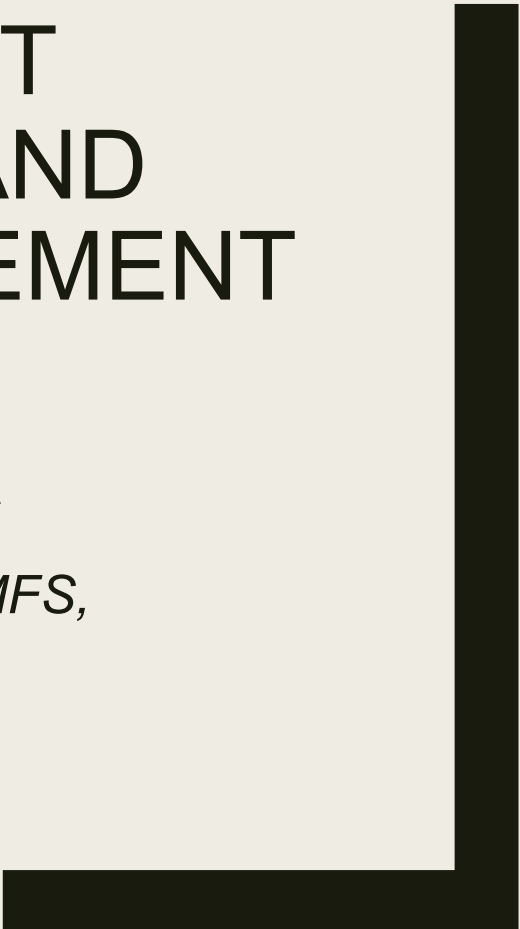




STOCK MARKET PARTICIPATION AND SAVING FOR RETIREMENT

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*Goethe University Frankfurt, IMFS,
NETSPAR, and CEPR*



Standard models: Everybody should be holding stocks!

■ Intuition:

- *It is not idiosyncratic risk that matters, but the **contribution** of stocks to the overall consumption (or portfolio) risk faced by the household.*
- *At zero stockholding:*
 - Stocks dominate the riskless asset in *expected return*.
 - They have *zero covariance* with consumption (as long as income is nonrandom, or uncorrelated with stock returns).
 - So, they strictly *dominate* the riskless asset, and it is optimal to invest a positive amount in stocks, however small.

The Stock Market Participation Puzzle

- King and Leape (1987), Mankiw and Zeldes (1991), Haliassos and Bertaut (1995) documented that about 25-35% of households held stocks, directly or indirectly, in the mid 1980s in the US.
- In 2022, the proportion was around 58%.
- The puzzle is that so *few* households actually hold stocks, despite a historical equity premium in the US estimated by Mehra and Prescott (1985) to be of the order of 6 percentage points.

The portfolio share conditional on participation

- *For given (normalized) financial resources, optimal portfolio share should go down as age increases.*
 - Cocco, Gomes, Maenhout (2005):
 - Financial wealth becomes more important than human wealth in financing future consumption as the household ages.
 - Gollier (2001): *time diversification*
 - The older have less time to spread the consumption consequences of a stock market downturn.

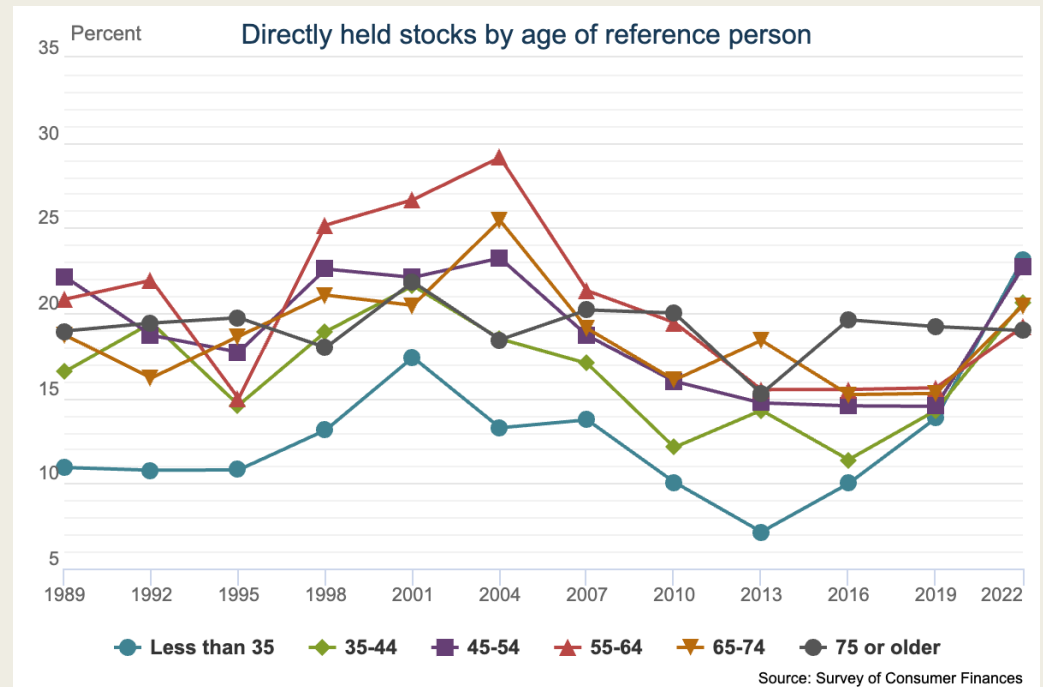
But conflicting factor: Luxuries vs Necessities

Wachter and Yogo (2010)

- A conflict here:
 - *The standard incentive to lower the risky portfolio share as **you rely more on financial wealth** also operates in this model*
 - *However, it is offset by a rising life-cycle income profile, which makes **people risk mostly luxuries** rather than necessities in consumption*
 - This causes risk aversion to fall in age.
- The model produces a **relatively flat age profile** in the portfolio share, as found in the US!
 - *So, aging does not need to be associated with lower portfolio shares in stocks, unless it leads to substantial drops in permanent income!*

US Stock market
participation over
time, by age
Source: SCF
Interactive Tools

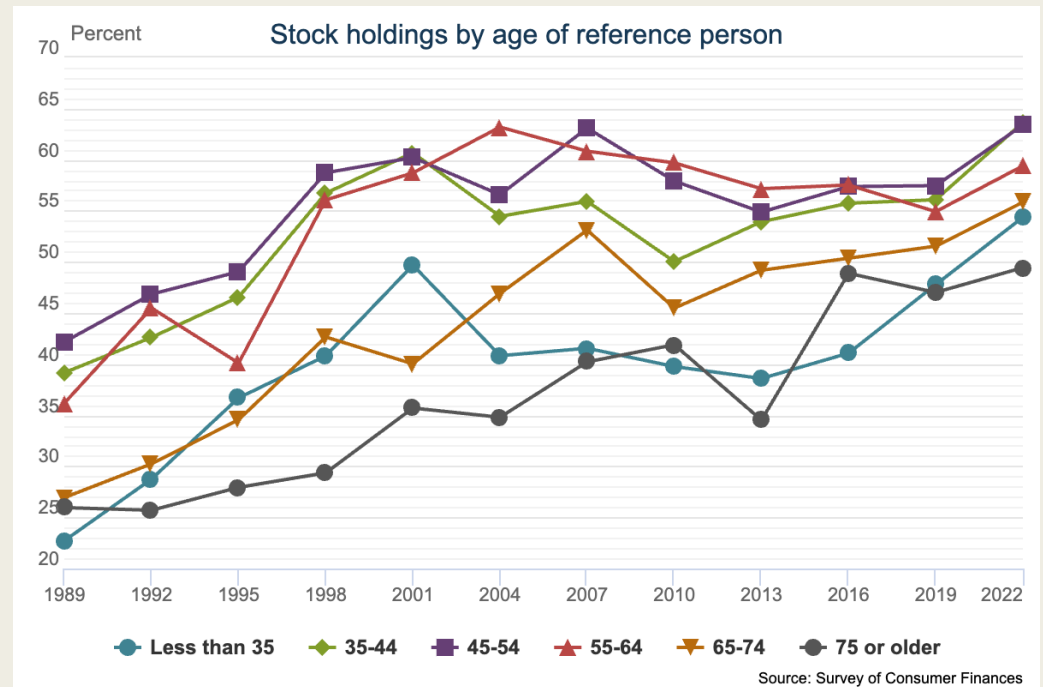
- Direct stockholding is NOT the major factor in the US!
- The direct participation rates for young retirees and the 75+ are in the middle
- They hover around 20%



US Direct or Indirect Stock market participation over time, by age

Source: SCF Interactive Tools

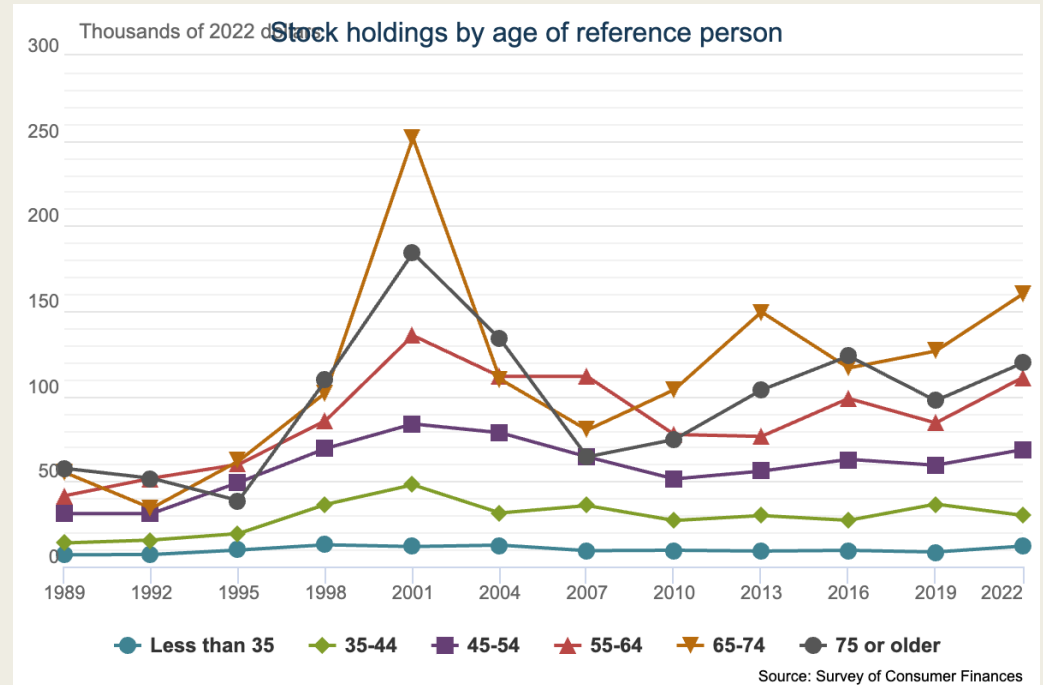
- Over time SMP grew for all groups: the overall SMP in 2022 was 58%
- The participation rates for the 75+ are at the bottom
- Young retirees alternate with the youngest cohort



US Conditional Stock holdings (direct or indirect) by age

Source: SCF interactive tools

- But: Top amounts for the two oldest groups
- Note: Great volatility in conditional amounts!



Stock market participation in the Eurozone: across age groups

Source: HFCS Statistical Tables 2020-21 (4th wave)

Table C5 Financial assets, has shares - breakdowns
% of households

		euro area	BE	CZ	DE	EE	IE	GR	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PT	SI	SK	FI
Age of RP	16-34	10.1 (0.8)	5.2 (1.7)	3.7 (1.3)	14.5 (2.0)	13.3 (2.0)	11.7 (1.9)	0.3 (0.3)	6.4 (1.6)	8.5 (1.0)	2.0 (1.6)	5.8 (3.1)	3.9 (3.3)	0.7 (0.4)	3.1 (1.5)	15.8 (2.5)	2.7 (0.8)	5.6 (0.1)	11.4 (1.7)	3.6 (1.4)	5.5 (2.4)	3.5 (1.9)	0.2 (0.2)	13.9 (0.9)
	35-44	10.1 (0.6)	10.0 (1.9)	4.6 (1.0)	15.7 (1.7)	14.3 (1.8)	7.7 (0.9)	0.4 (0.4)	8.7 (1.3)	11.6 (1.0)	1.9 (1.9)	6.7 (1.8)	2.9 (1.5)	0.9 (0.6)	1.7 (1.1)	16.0 (2.2)	2.6 (0.5)	5.9 (0.1)	4.6 (1.2)	6.1 (1.8)	3.1 (0.8)	4.9 (1.3)	3.2 (1.4)	19.9 (1.1)
	45-54	12.7 (0.6)	13.6 (2.0)	3.1 (0.8)	18.2 (2.1)	10.1 (1.5)	12.7 (1.2)	1.2 (0.5)	12.0 (1.2)	15.7 (1.0)	4.2 (1.7)	8.9 (1.2)	7.4 (2.3)	1.3 (0.7)	1.4 (0.7)	12.5 (1.8)	2.5 (0.6)	10.0 (0.1)	5.7 (1.3)	7.5 (1.7)	6.5 (0.8)	5.6 (1.1)	1.9 (0.8)	24.2 (1.2)
	55-64	11.2 (0.5)	16.6 (2.0)	3.6 (0.9)	14.4 (1.5)	5.8 (1.3)	12.1 (1.4)	2.7 (1.0)	13.9 (1.4)	12.5 (1.0)	5.4 (1.7)	7.9 (1.2)	7.3 (1.7)	4.5 (2.7)	0.2 (0.2)	20.2 (2.6)	1.8 (0.4)	5.7 (0.1)	5.9 (1.1)	7.8 (1.4)	4.9 (0.7)	5.7 (1.3)	2.2 (1.0)	20.9 (1.0)
	65-74	10.7 (0.5)	9.1 (1.4)	4.9 (0.9)	15.2 (1.7)	4.2 (1.2)	10.1 (1.3)	1.2 (0.5)	16.0 (1.5)	13.2 (1.0)	5.1 (1.9)	5.4 (1.0)	10.6 (2.3)	1.7 (0.8)	0.0 (0.1)	27.5 (4.2)	1.9 (0.4)	12.3 (0.1)	4.4 (0.8)	3.7 (0.9)	4.6 (0.7)	6.6 (1.4)	0.9 (0.7)	25.1 (1.2)
	75+	9.8 (0.6)	10.0 (2.1)	2.9 (0.8)	14.5 (2.0)	4.3 (1.3)	9.0 (1.1)	0.5 (0.5)	14.7 (1.6)	10.7 (1.2)	1.4 (0.8)	3.9 (0.7)	3.9 (1.5)	0.6 (0.6)	1.4 (1.1)	21.5 (5.2)	0.6 (0.2)	10.4 (0.1)	3.5 (0.9)	6.6 (1.4)	3.9 (0.7)	3.5 (0.9)	0.8 (0.5)	19.9 (1.3)

Stock market participation across the Eurozone

Source: HFCS Statistical Tables 2020-21

Table C5 Financial assets, has shares - breakdowns
% of households

		euro area	BE	CZ	DE	EE	IE	GR	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PT	SI	SK	FI
Age of RP	16-34	10.1	5.2	3.7	14.5	13.3	11.7	0.3	6.4	8.5	2.0	5.8	3.9	0.7	3.1	15.8	2.7	5.6	11.4	3.6	5.5	3.5	0.2	13.9
		(0.8)	(1.7)	(1.3)	(2.0)	(2.0)	(1.9)	(0.3)	(1.6)	(1.0)	(1.6)	(3.1)	(3.3)	(0.4)	(1.5)	(2.5)	(0.8)	(0.1)	(1.7)	(1.4)	(2.4)	(1.9)	(0.2)	(0.9)
	35-44	10.1	10.0	4.6	15.7	14.3	7.7	0.4	8.7	11.6	1.9	6.7	2.9	0.9	1.7	16.0	2.6	5.9	4.6	6.1	3.1	4.9	3.2	19.9
		(0.6)	(1.9)	(1.0)	(1.7)	(1.8)	(0.9)	(0.4)	(1.3)	(1.0)	(1.9)	(1.8)	(1.5)	(0.6)	(1.1)	(2.2)	(0.5)	(0.1)	(1.2)	(1.8)	(0.8)	(1.3)	(1.4)	(1.1)
	45-54	12.7	13.6	3.1	18.2	10.1	12.7	1.2	12.0	15.7	4.2	8.9	7.4	1.3	1.4	12.5	2.5	10.0	5.7	7.5	6.5	5.6	1.9	24.2
		(0.6)	(2.0)	(0.8)	(2.1)	(1.5)	(1.2)	(0.5)	(1.2)	(1.0)	(1.7)	(1.2)	(2.3)	(0.7)	(0.7)	(1.8)	(0.6)	(0.1)	(1.3)	(1.7)	(0.8)	(1.1)	(0.8)	(1.2)
75+	55-64	11.2	16.6	3.6	14.4	5.8	12.1	2.7	13.9	12.5	5.4	7.9	7.3	4.5	0.2	20.2	1.8	5.7	5.9	7.8	4.9	5.7	2.2	20.9
		(0.5)	(2.0)	(0.9)	(1.5)	(1.3)	(1.4)	(1.0)	(1.4)	(1.0)	(1.7)	(1.2)	(1.7)	(2.7)	(0.2)	(2.6)	(0.4)	(0.1)	(1.1)	(1.4)	(0.7)	(1.3)	(1.0)	(1.0)
75+	65-74	10.7	9.1	4.9	15.2	4.2	10.1	1.2	16.0	13.2	5.1	5.4	10.6	1.7	0.0	27.5	1.9	12.3	4.4	3.7	4.6	6.6	0.9	25.1
		(0.5)	(1.4)	(0.9)	(1.7)	(1.2)	(1.3)	(0.5)	(1.5)	(1.0)	(1.9)	(1.0)	(2.3)	(0.8)	(0.1)	(4.2)	(0.4)	(0.1)	(0.8)	(0.9)	(0.7)	(1.4)	(0.7)	(1.2)
75+	75+	9.8	10.0	2.9	14.5	4.3	9.0	0.5	14.7	10.7	1.4	3.9	3.9	0.6	1.4	21.5	0.6	10.4	3.5	6.6	3.9	3.5	0.8	19.9
		(0.6)	(2.1)	(0.8)	(2.0)	(1.3)	(1.1)	(0.5)	(1.6)	(1.2)	(0.8)	(0.7)	(1.5)	(0.6)	(1.1)	(5.2)	(0.2)	(0.1)	(0.9)	(1.4)	(0.7)	(0.9)	(0.5)	(1.3)

Do participation and the risky portfolio share go down **because of** age?

- Econometric estimation of age effects, **controlling for other factors**, is challenging.
- Findings:
 - *Participation rates do go down in older ages*
 - *Hardly any consistent relationship between age and conditional portfolio share in US (Ameriks and Zeldes, 2005).*
 - *BUT: reduced conditional share in Norway, as estimated by Fagereng, Gottlieb, Guiso (JF 2017)*

Ameriks/Zeldes: TIAA-CREF Data

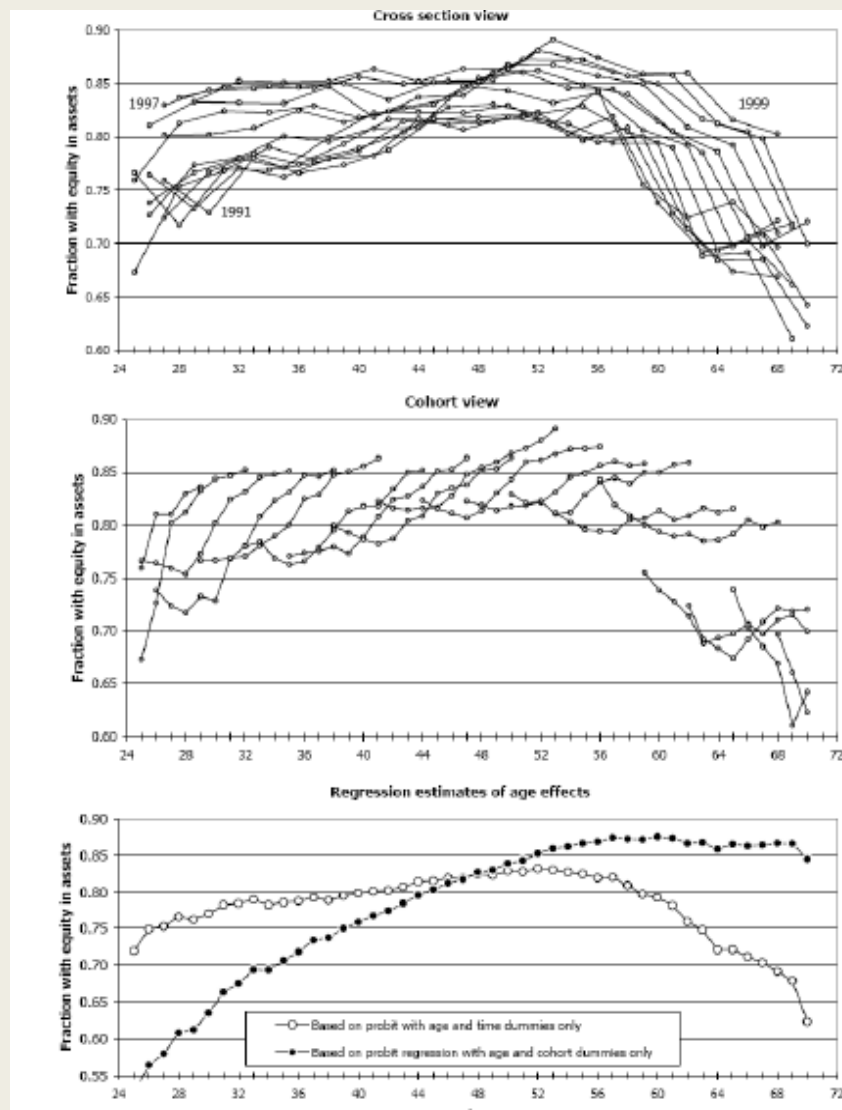


Figure 11

Fraction of
Participants with
Equity in Assets

TIAA-CREF Data
1987-1999

Ameriks/Zeldes: TIAA-CREF Data

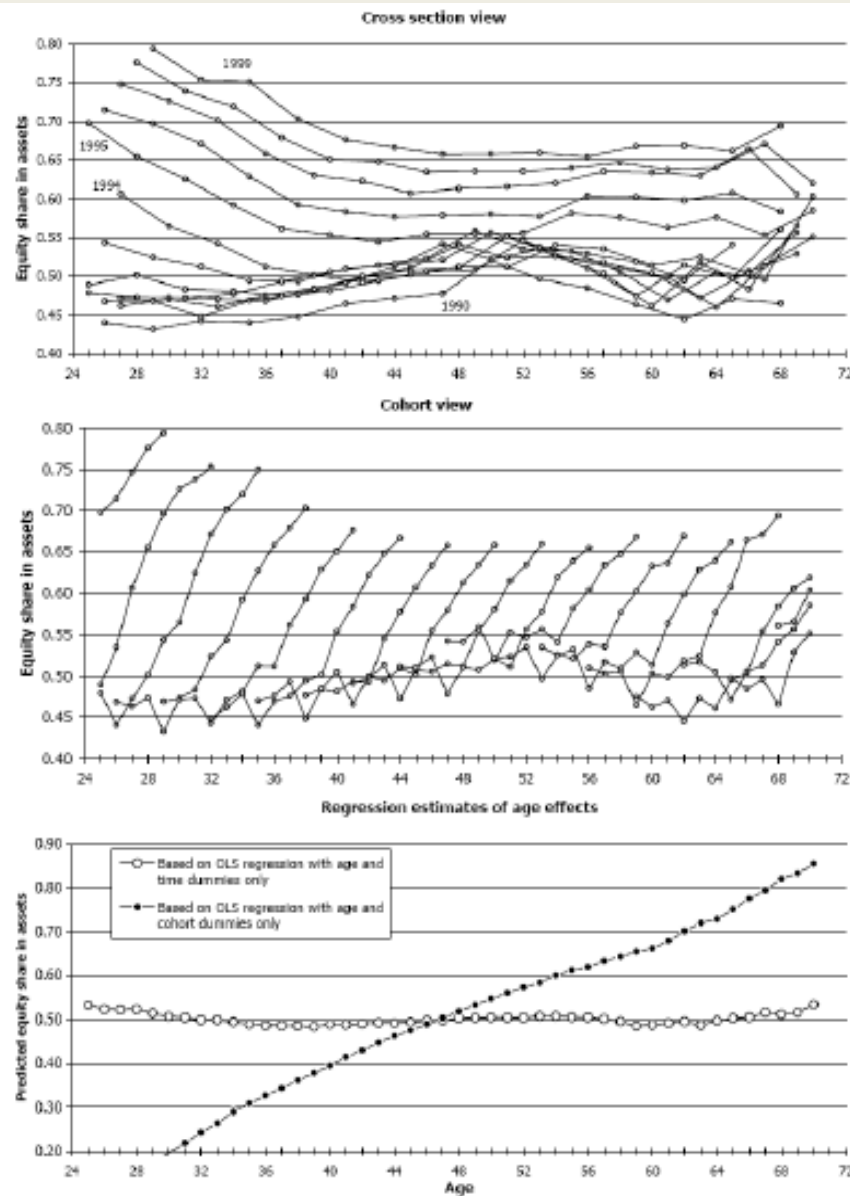


Figure 12

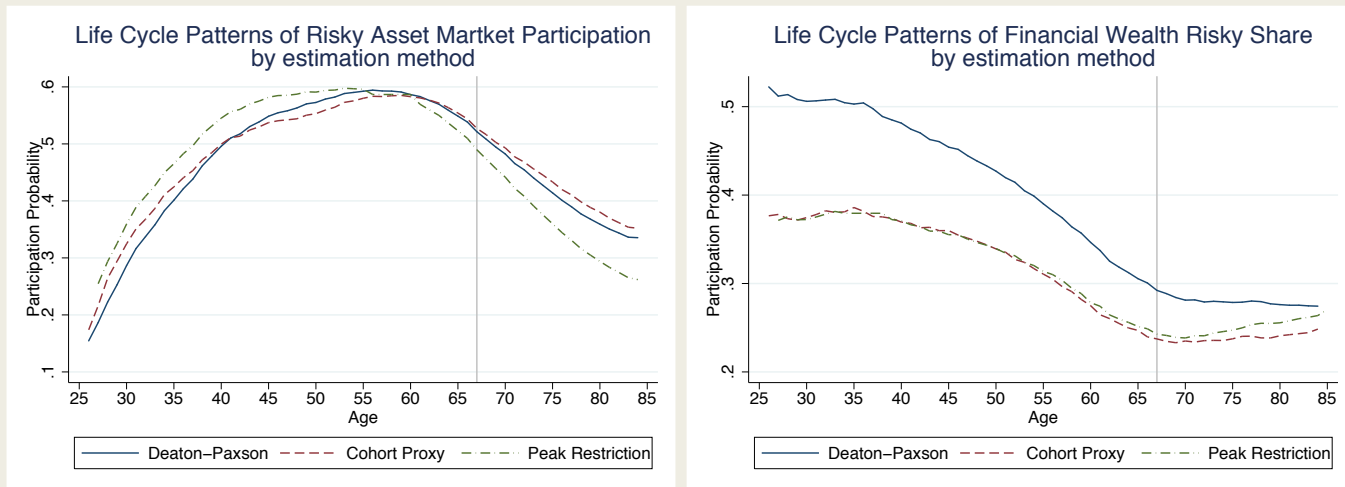
Equity Share in
Assets Among
Equity Holders

TIAA-CREF Data
1987-1999

Matching the Norwegian Data

Fagereng, Gottlieb, Guiso (2017)

Figure 4.2: Estimation: Comparing methodologies



Note: The left panel of the Figure plots the life cycle patterns of **Risky Asset Market Participation** coming from the Heckman selection equations reported in Table 4.1 applying the three different methodologies, Deaton-Paxson, cohort-proxy and peak restriction. The participation graphs plot the marginal values of the estimated underlying probit equations. The right panel plots the life cycle patterns of **Conditional Risky Share** of financial wealth coming from the Heckman selection equations reported in Table 4.1 applying the three different methodologies: Deaton-Paxson, Cohort-Proxy and Peak Restriction.

- A remarkable fit to the central implications of the theory!
- Better stockholders or better data and methods?

Widely used solution to Participation Puzzle:

Fixed Costs of Entry or Participation

- Haliassos and Bertaut (1995), Luttmer (1999), Vissing Jorgensen (2002), Haliassos and Michaelides (2003), Gomes and Michaelides (2005):
 - *Impose a hurdle* that potential stock market participants must overcome:
 - First-time entrants have to pay a fixed entry cost
 - Continued participation may also entail a fixed cost
- People compare:
 - *Perceived Equity premium * Planned stockholding*
- to
 - *Fixed entry or participation cost, as relevant*
 - Three levels:
 - Objective costs
 - Costs of own time
 - Perceived costs
 - Noted in EJ 1995, not understood
 - Essentially unobservable.

Current Insights from a mixed methods approach

Duraj, Grunow, Haliassos, Laudenbach, Siegel (2024)

- Mixed methods: use a **survey** to understand broader applicability of small-sample **qualitative findings**.
- Importantly, **interviewees are aware of equity market return premium** and recognize market returns as attractive.
- While they acknowledge volatility, uncertainty, and possible losses as negative aspects, **it is the size of the perceived entry and participation costs that stand out** relative to the existing finance literature and as an important negative determinant of stock market participation.
- While entry and participation costs were known categorically, our interviews and survey results suggest that **they are more important than expected due to a fundamental misconception of**
 - *how markets work (**market efficiency**)*
 - *The need for repeated transactions to **time the market***
 - *The perceived **illiquidity** of stock holdings*
 - *The perceived potential to eliminate the risk of losses through monitoring companies ("**safe stocks**")*
 - *The **ignorance of fractional holdings and delegation** through mutual funds (**high cost of diversification**)*
- While there is **cross-sectional variation in how painful learning and monitoring are**, both play a bigger than expected role in leading to non-participation.

Current Insights from a mixed methods approach

Duraj, Grunow, Haliassos, Laudenbach, Siegel (2024)



Perceptions of three types

- Analysis-P has a lot of financial knowledge, selects 10 DAX companies specifically, and constantly adjusts the portfolio.
- Random-P knows only the names of the DAX companies, selects 10 randomly, and does not adjust the portfolio.
- Passive-P has little financial knowledge, invests in a DAX ETF, and does not adjust the portfolio.

Which other factors have been found to be relevant for non-participation?

■ Reduced attractiveness of stocks relative to bonds

– *Limited expected-return attractiveness*

- Trust: Guiso, Sapienza, Zingales (JF 2008): probability of getting cheated with stocks
- Subjective expectations and pessimism: Dominitz and Manski (JEEA 2010): Disagreement on equity premium
- Interest rate wedge: Davis, Kubler, Willen (2006): stocks not a good deal if you must borrow to invest

■ The individual does not consider the full asset menu

– *Asset ignorance: Guiso and Jappelli (2005)*

– *Social interactions: only some can learn about assets and lower their entry/participation costs*

- Hong, Kubik, Stein (2004): sociability encourages stockholding
- Duflo and Saez (2006): learning about assets from coworkers

– *Narrow framing: (Barberis, Huang, Thaler, 2006)*

Which other factors have been found to be relevant for non-participation?

■ Probability of disasters (Alan, 2012)

- *Alan follows an insight from Reitz (1988), brought back by Barro (2006).*
 - There is a positive probability of a disastrous income state; and then, conditional on that occurring, a positive probability of a disaster in stock returns

■ Competition of stocks with a third asset

- *Possible substitution of **private businesses** for stocks*
 - Heaton and Lucas (2000) make this argument for rich households
 - Roussanov (2010): desire to beat the Joneses through access to a private asset (unlisted business) rather than to listed stocks
- *Competition with investment in **human capital***
 - Athreya, Ionescu, Neelakantan (2023)

Can knowledgeable peers help?

Financial Literacy Externalities

Haliassos, Jansson, Karabulut (RFS 2020)

- We exploit the **Swedish refugee allocation program** (1987-1991, 277/284 municipalities participated)
- **Refugees** with **at least a high school certificate** placed in areas with higher shares of **neighbors** with **college education in business and economics** were more likely to be participating in:
 - *private retirement accounts and stockholding*
 - 10-15 years later
 - *stockholding*
 - 15-20 years later
- Troublesome: **distributional effects of homophily.**

How do peers compare with professionals?

Rumpf, Haliassos, Tesyakova, Otter (2024)

- Older people are more likely to be talking to professionals compared to the young. (Hackethal, Haliassos, Jappelli, 2012 and others)
 - ***Does this help boost stock exposure?***
- We conduct an experiment:
 - *We present professional and lay advisors with randomly assigned vignettes of investors and elicit their recommendations on the risky portfolio share for retirement saving.*
 - *Professionals are incentivized independently of the advice*
 - No conflict of interest

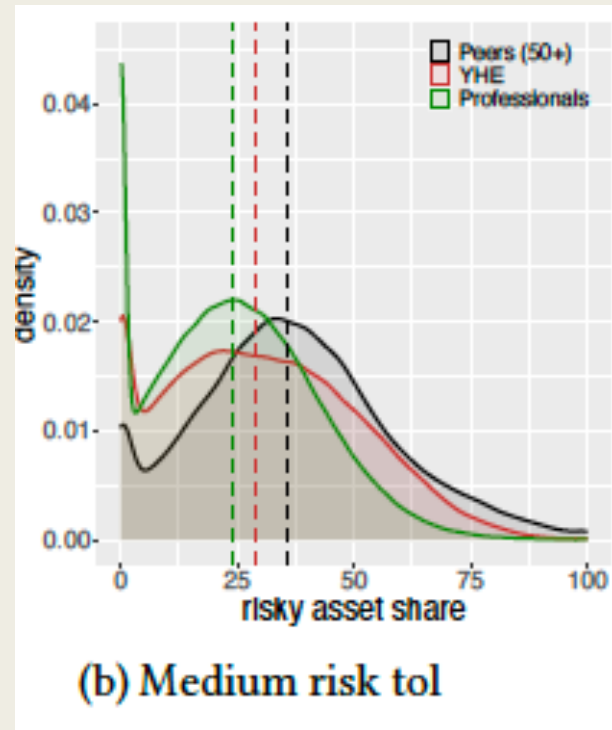
The type of advice: Findings

- Both advisor types are **influenced by their own characteristics** in their advice:
 - *Income, age, risk aversion, and even risk exposure*
- Both **respond to investor characteristics**, in the direction of theory overall
- As advice is heterogeneous, what range of advice are older people likely to get from professionals versus from their peers or their adult children (young earners)?
 - *We estimate the distribution of advice for different investor types*
 - ***Professionals are more conservative in their advice on the risky portfolio share than peers and young adults!***
 - *So, promoting access to professional advisors does not necessarily lead to greater stock market involvement for the older groups.*

The range of advice potentially given to:

■ A Wealthy retiree:

- *Professional advisors are the most conservative*
- *more conservative advice from high-income young people than from the own age-education peers*

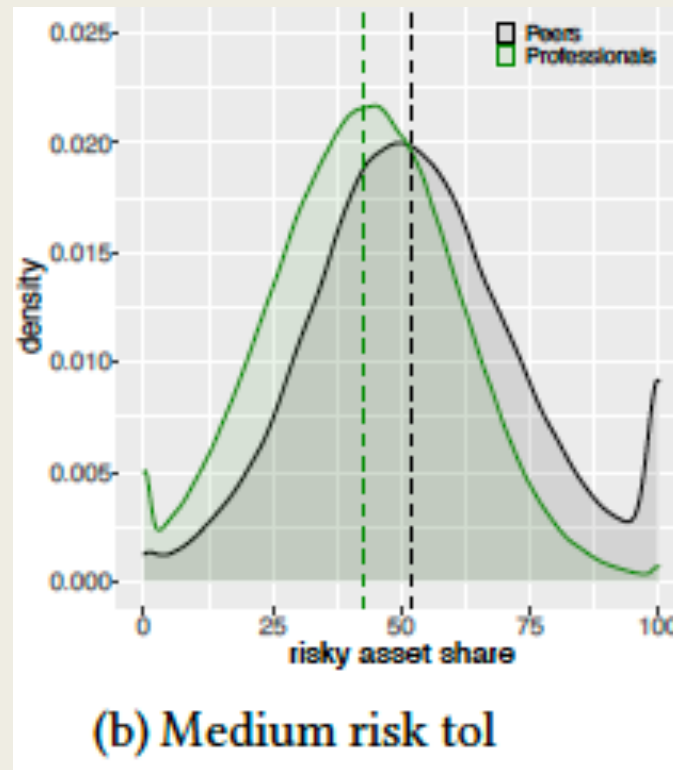


- *Verticals are median advice by advisor group*

The range of advice given to:

■ Wealthy 50 to 65:

- *more conservative advice from professionals than from peers in the same age-education group.*



- *Verticals are median advice by advisor group*

Key takeaways

- The standard portfolio model implies that **all should be participating** in stocks, regardless of age.
- The predictions on the **conditional portfolio share** do **not necessarily** imply **drops in old age**: conflicting factors
- The **raw data for the US and EU** show that stock market participation and the conditional portfolio share are **lowest among the oldest groups**.
- **Removing confounding factors** is econometrically challenging:
 - *In US and Norwegian data, **participation drops in older ages***
 - *The conditional portfolio share , as a function of age, is flat in the US and downward sloping in Norway*
- **Can peers help?**
 - *The educated old can benefit from interactions with peers educated in Economics or Business, but this is not true of other peer groups*
- **Can financial advice help?**
 - *The current pattern of access to financial advice seems to discourage overall stock market participation*