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Center for
Financial Security
UNIVERSITY OF WISCONSIN-MADISON



Panel 3: Health Risks for Work and Finances

Retirement and Disability Research Consortium
22nd Annual Meeting
August 6, 2020

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Panel 3: Health Risks for Work and Finance

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Setting the Stage

- Disability Trends and Work-Related Risks
- Risks and Resources in Older Age
 - Role of health/function in disability applications and award
 - Role of cognitive decline in financial security
 - Identifying and mitigating risks
 - Understanding changes over time

“The Interaction of Health, Genetics, and Occupational Demands in DI Determinations”

- Issue:

- Are DI outcomes related to occupational demands and employment history? Are there things that explain occupational selection? Do genetics play a role?

- What they did:

- Use the HRS, matched to SSDI applications, O*NET, and genetic information

- Findings:

- Social factors (race, childhood SES) more strongly associated with SSDI applications than workplace demands
 - But, conditional on application, job demands are more important
 - Higher genetic risk for several factors is associated with DI application and receipt

“Cognitive Ability, Cognitive Aging, and Debt Accumulation”

- Issue:

- Increasing complexity of financial products may have led to higher debt and greater financial insecurity later in life; individuals with low cognitive ability may be especially vulnerable

- What they did:

- Look at relationship of complexity of financial products over time, increased debt accumulation at older ages, and HRS measures of cognitive ability/decline.
- Verify correlation using UAS

- Findings:

- Debt burdens have increased among those approaching and after retirement ages
- Cognitive ability predicts debt burden in older ages
 - Higher cognitive ability associated with higher debt
 - Financial literacy eliminates relationship
- Adults with higher cognitive ability had less wealth after financial crisis and higher debt levels, particularly less liquid wealth

“Financial Consequences of Health and Healthcare Spending Among Older Couples”

- Issue:

- What are impacts of dementia on financial security of older individuals? Are there early signs of risk?

- What they did:

- Compare extent of adverse financial events before and after Alzheimer’s and related dementias (ADRD) diagnosis.
 - Use time from ADRD diagnosis to missed payments, subprime credit scores compared with non-ADRD individuals
 - Use Medicare data and consumer credit reports

- Findings:

- Those diagnosed were more likely to miss payments as early as 6 years before diagnosis and have subprime scores 2.5 years prior

Concluding Thoughts

- Harrati and Schmitz:
 - Value of early intervention
 - Occupational Requirements Survey?
- Angrisani et al.
 - Important in understanding financial security and how people weather economic storms
 - Role of Social Security benefits?
- Nicholas and Hsu:
 - Importance of early diagnosis—can financial indicators help?
 - Single-person versus married households

The Interaction of Health, Genetics, and Occupational Demands in SSDI Determinations

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Virtual RDRC Meeting

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Motivation: the occupational health gradient in SSDI

- Evaluations of Social Security Disability Insurance (SSDI) applications consider both health AND vocational factors
- Individuals in lower status jobs have worse health and faster declines in health (Marmot et al. 1991; Mackenbach et al. 2003; Schmitz 2016; Harrati 2019)
- One possibility is that work environments themselves make people sicker, resulting in unequal SSDI claiming across occupations
- An alternative, and non-mutually exclusive explanation is that life course factors independently cluster individuals in poorer health into lower status occupations
 - Childhood socioeconomic status
 - Education
 - Childhood health
 - Underlying health (genetic propensity)

Research Questions

1. Are differences in SSDI application, receipt, and denial a function of the occupational demands of applicants' employment histories?
2. To what extent can these differences be explained by life course factors that affect occupational selection?
3. What is the role of underlying health in the relationship between occupation and SSDI?
 - Utilize genetic data to capture unobserved health propensity
 - Endowed at point of conception and fixed across the life course

Summary of Findings

1. Social inequities that influence access to opportunity, including childhood SES, are more strongly associated with SSDI application than job demands
 - Exception: psychosocial work environment that gives individuals greater control over how to best meet the demands of their jobs negatively associated with SSDI application

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Summary of Findings

1. Social inequities that influence access to opportunity, including childhood SES, are more strongly associated with SSDI application than job demands
 - Exception: psychosocial work environment that gives individuals greater control over how to best meet the demands of their jobs (negatively associated with SSDI application)
2. Conditional on SSDI application, physical, mental, and sensory job demands display stronger associations with SSDI approvals and denials than structural or social factors
3. Higher genetic risk for depression, cardiovascular disease, BMI, dementia, and rheumatoid arthritis are independently associated with SSDI application and approval

Use rich data linked to the Health and Retirement Study

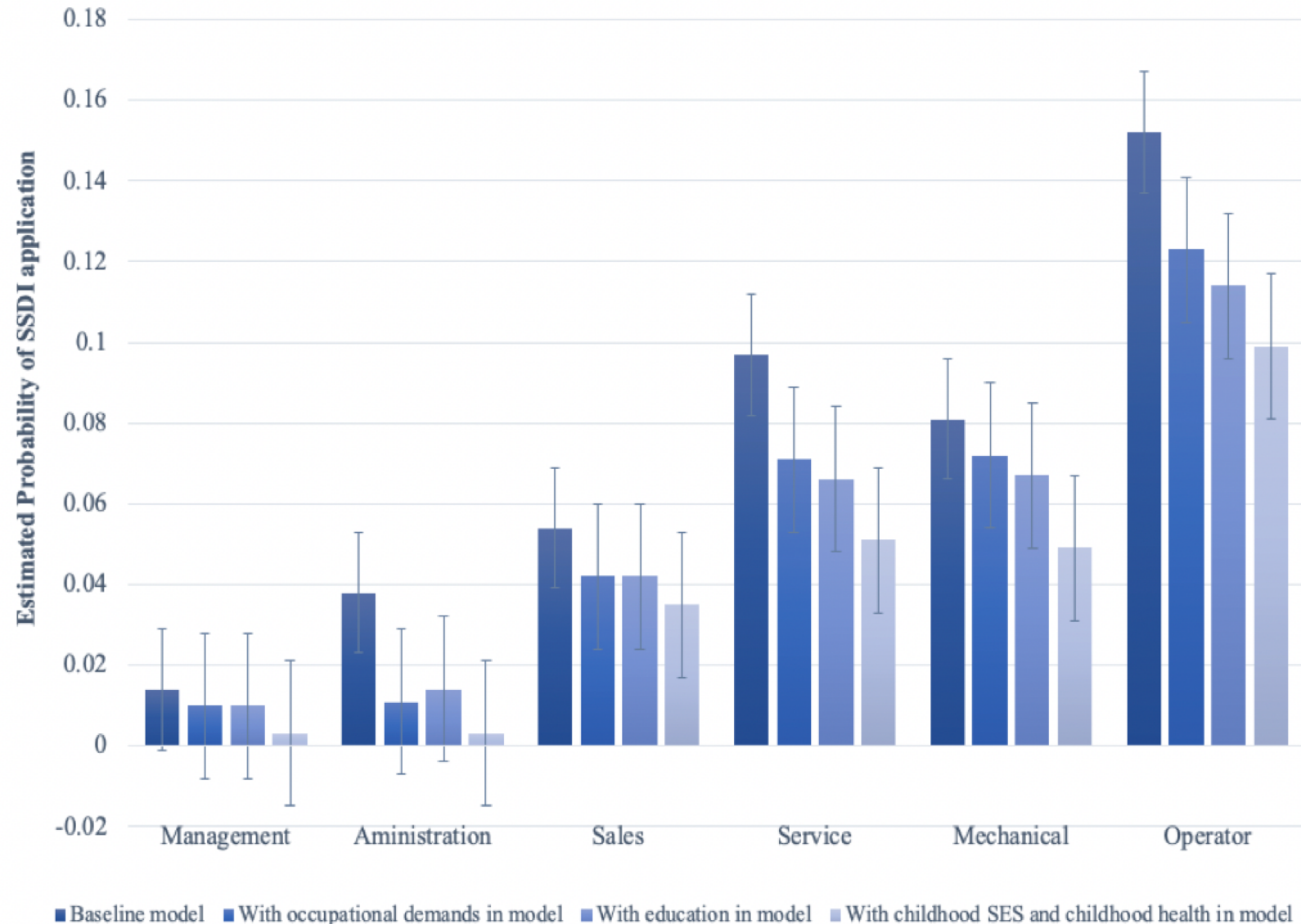
1. HRS core surveys (1992-2016)
 - Demographics, education, childhood SES
 - Employment history (longest held occupation)
2. SSDI records from linked Form 831 files
3. Job Demands: O*NET (composite indicators that mirror SSA medical-vocational grid)
 - Physical demands
 - Mental demands
 - Sensory demands
 - Environmental hazards
 - Psychosocial environment (“degree of control and influence”)
4. Genetic data (polygenic scores (PGSs) that mirror frequent SSDI medical conditions)
 - Depressive symptoms, myocardial infarction (MI), rheumatoid arthritis, BMI, cognitive function

Methods

- Stepwise linear probability models
- Sequentially examine relationships between SSDI outcomes and 1) occupation, 2) job demands, 3) childhood SES and health, and 4) genetic propensity
 - SSDI Outcomes:
 - Applied to SSDI (1 if in the Form 831 file, 0 otherwise)
 - Approved (1 if applicants have at least one approved claim, 0 if all claims were denied)
 - Approved or denied for medical or work capacity reasons (1 if approved/denied for medical reasons, 0 if approved/denied for work capacity reasons)
- Covariates: race, sex, survey year, HRS cohort, industry, and residential Census division, age, age²
- Estimates are weighted to account for HRS complex survey design and respondent's consent to SSA administrative data linkage

Estimated probability of SSDI application across occupations

Education, childhood SES, and childhood health explain more of the occupational gradient in SSDI application than job demands



Stronger relationship between SSDI approvals and job demands

	Applied to SSDI	SSDI Claim Approved	Approved for Medical Reasons	Denied for Medical Reasons
Physical capacity	-0.004 [0.007]	-0.041** [0.020]	-0.054* [0.029]	-0.020 [0.034]
Environmental hazards	-0.006 [0.007]	-0.015 [0.026]	-0.004 [0.026]	-0.004 [0.035]
Mental capacity	0.001 [0.008]	0.036 [0.028]	-0.075** [0.031]	0.018 [0.039]
Sensory (hearing and vision)	0.001 [0.004]	-0.013 [0.016]	0.052*** [0.015]	0.011 [0.018]
Psychosocial work environment (Degree of control and influence)	-0.017** [0.007]	-0.030 [0.024]	0.053 [0.035]	-0.008 [0.038]
N	22,752	1,665	883	699

Note: All models control for longest held occupation, education, childhood SES, childhood health, race, sex, age, age2, industry, cohort, survey year, and census division fixed effects. Models with childhood outcomes also control for census division in childhood. *** p<0.01, ** p<0.05, * p<0.1

Genetic risk contributes independently to SSDI application

Outcome: Applied to SSDI					
	PGS: Depressive symptoms	PGS: Myocardial infarction	PGS: Body Mass Index (BMI)	PGS: General cognition	PGS: Rheumatoid Arthritis
PGS (std)	0.011*** [0.003]	0.006* [0.003]	0.016*** [0.004]	-0.008** [0.004]	0.011** [0.005]
Physical demands (std)	-0.004 [0.004]	-0.004 [0.004]	-0.004 [0.004]	-0.004 [0.004]	-0.004 [0.004]
Mental demands (std)	-0.003 [0.004]	-0.003 [0.004]	-0.004 [0.005]	-0.003 [0.004]	-0.004 [0.005]
Psychosocial work environment (std)	-0.015*** [0.006]	-0.016*** [0.006]	-0.014** [0.006]	-0.015*** [0.006]	-0.014** [0.006]
PGS x physical demands	-0.003 [0.003]	-0.002 [0.003]	0.001 [0.004]	-0.002 [0.003]	-0.001 [0.005]
PGS x mental demands	0.003 [0.003]	-0.001 [0.003]	0.005 [0.004]	0.001 [0.003]	-0.003 [0.005]
PGS x psychosocial work environment	-0.006* [0.004]	0.003 [0.004]	-0.006 [0.004]	0.002 [0.004]	0.001 [0.006]
N	9413	9413	9413	9413	9413

Note: PGS estimates are available for the European ancestry subsample only. All models control for longest held occupation, sex, age, age2, industry, cohort, survey year, census division fixed effects, and the first ten European ancestry genetic principal components.

*** p<0.01, ** p<0.05, * p<0.1

Discussion and Policy Implications

- There is a strong occupational gradient in SSDI application
- More of the gradient is explained by early life course factors like childhood SES and education than by job demands
 - *Policies that mitigate social inequality earlier in the life course may reduce SSDI applications down the line*
- Conditional on SSDI application, there is evidence of a match between job demands related to individuals' occupation and the determination process
 - *Workplace interventions that improve job demands or allow for job transitions may allow workers to remain employed*
- Underlying genetic propensity is independently related to SSDI application
 - *Health and workplace interventions at early signs of health declines could attenuate SSDI caseloads*



Cognitive Ability, Cognitive Aging, and Debt Accumulation

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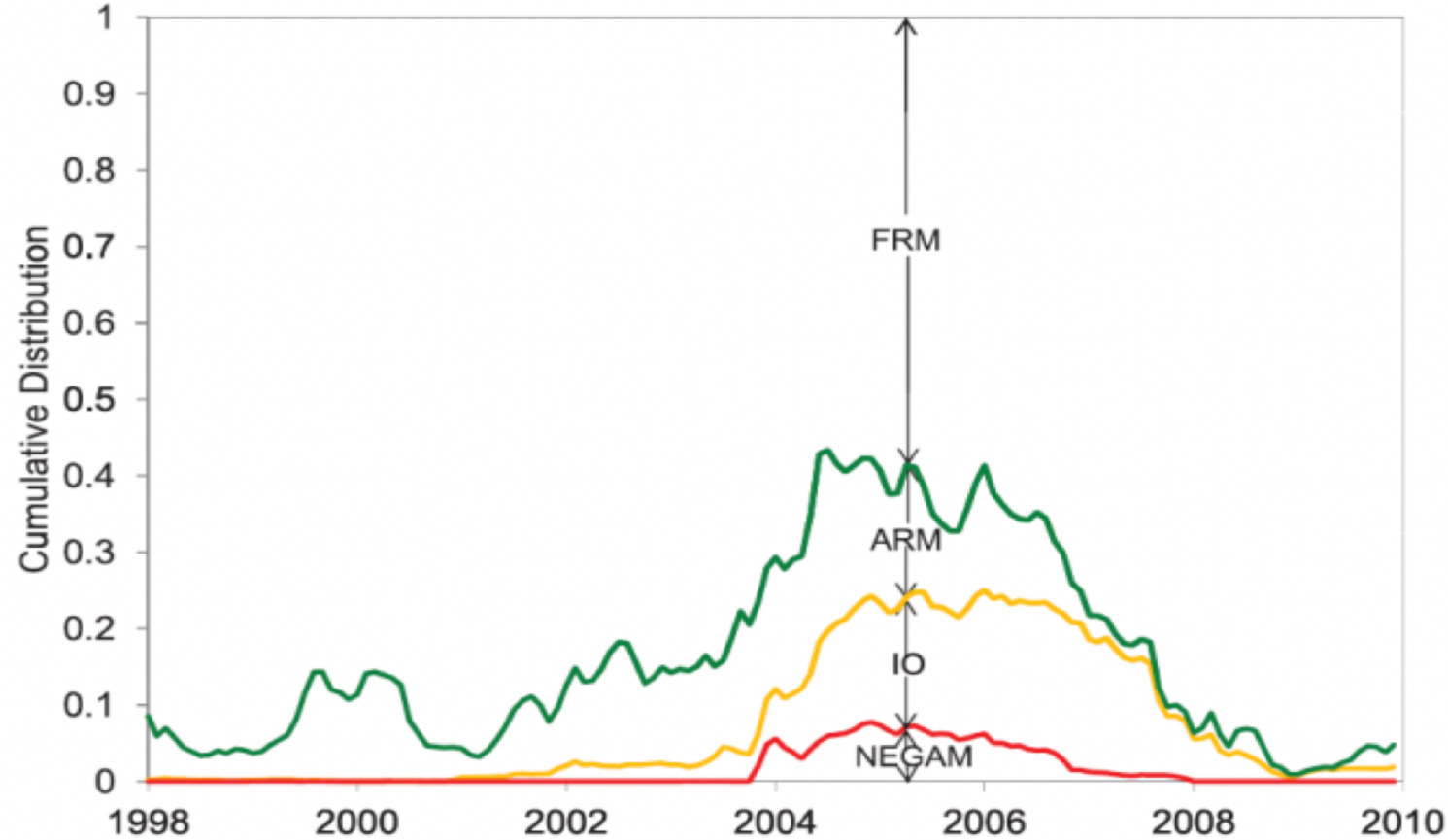
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Motivation



- Large literature on older adults' savings accumulation, relatively little work on debt burdens
- Recent evidence suggests older adults from recent cohorts carry larger debt burdens than predecessors
 - Lusardi, Mitchell, and Oggero (2020)
- Drivers for older adults largely unexplored
- One possibility: Increasing financial product complexity
 - Amromin et al. (2018)
 - Célérier and Vallée (2017)

Increasing Complexity



Source: Amromin et al. (2018)

Complexity and Cognitive Ability



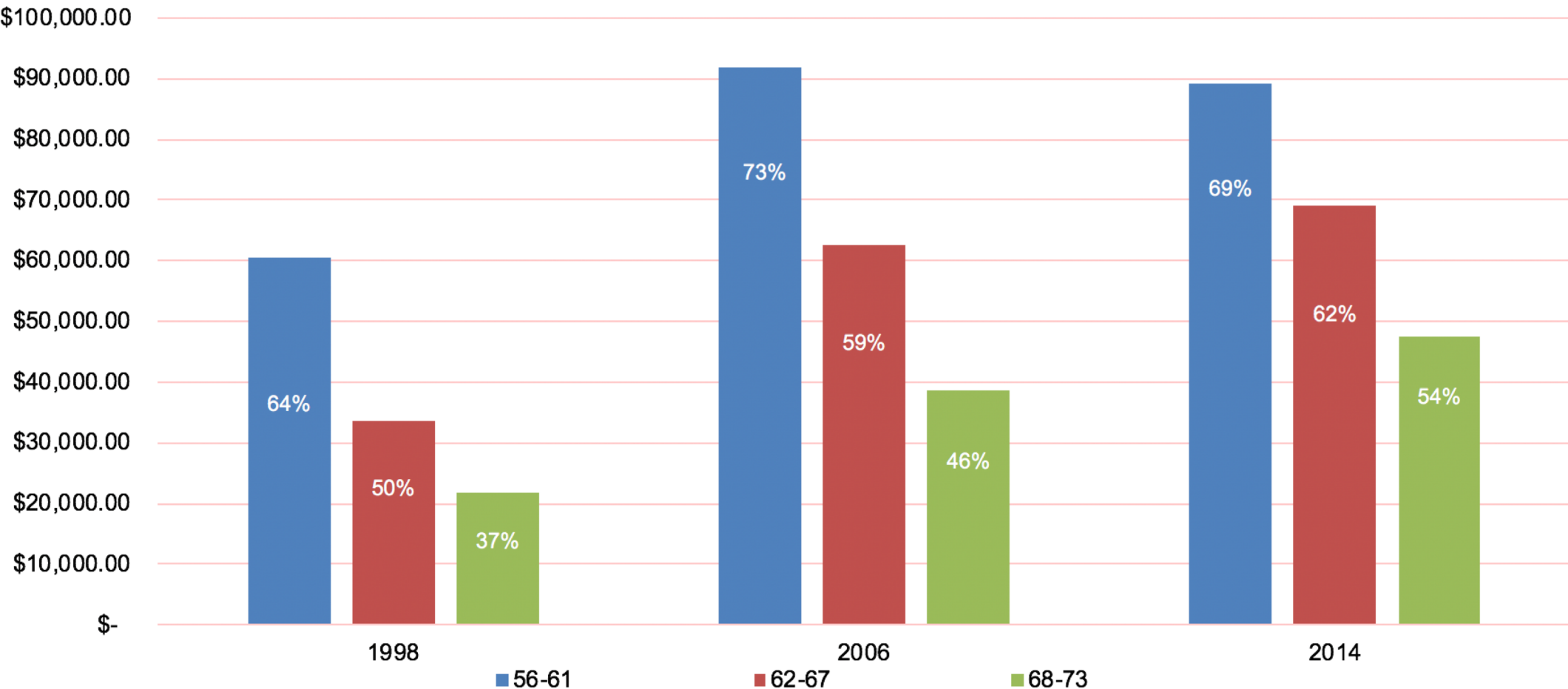
- Financial sophistication follows an inverse-U shaped pattern
 - Agarwal et al. (2009)
- Older adults from recent cohorts may have more difficulty navigating the financial landscape
- May be particularly difficult for older adults with lower cognitive ability
- Concern that unsophisticated consumers adopting (being sold) complicated products

Study



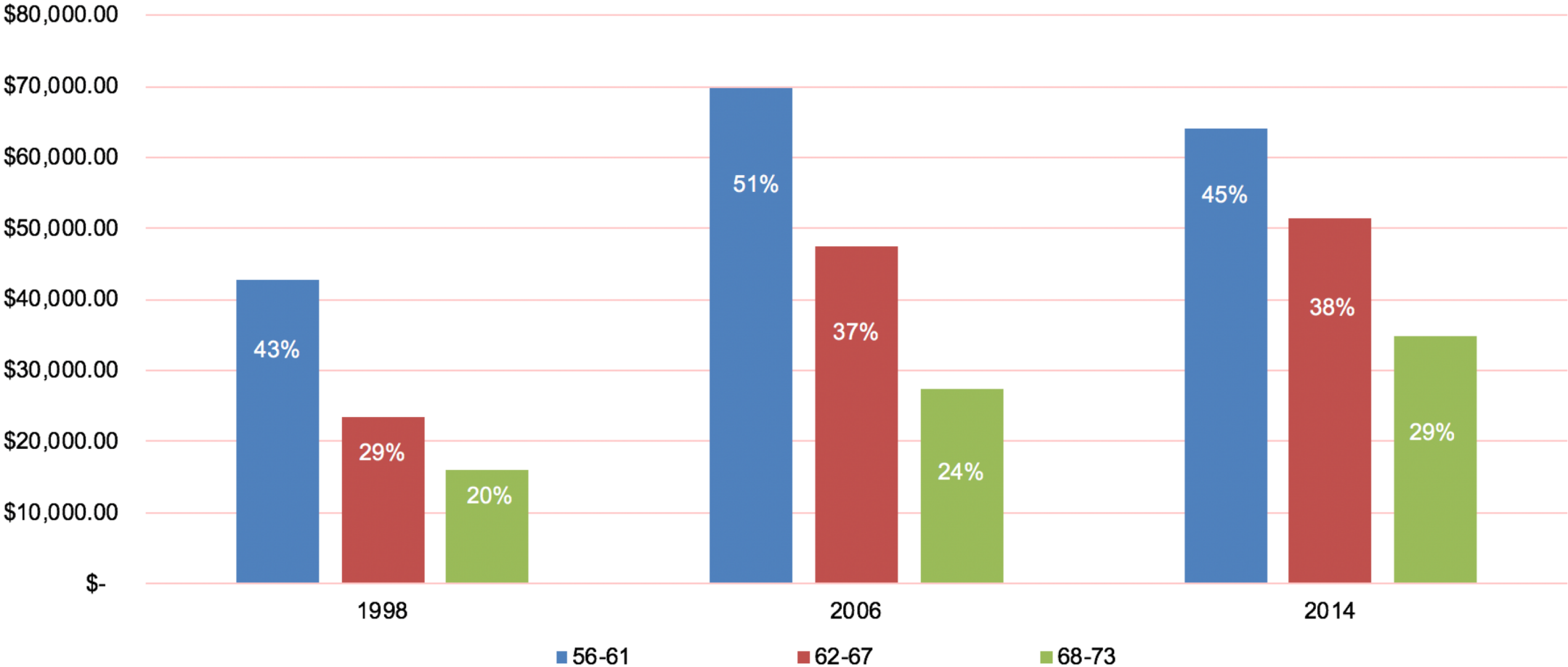
- Examine how cognitive ability is related to debt accumulation among older adults
- Examine whether this relationship varies over time as financial products have become more complex
- Use HRS data to create three age groups:
 - Age 56 – 61 (pre-retirement age)
 - Age 62 – 67 (retirement age)
 - Age 68 – 73 (post-retirement age)
 - Observed in 1998, 2006, and 2014

Mean Total Debt



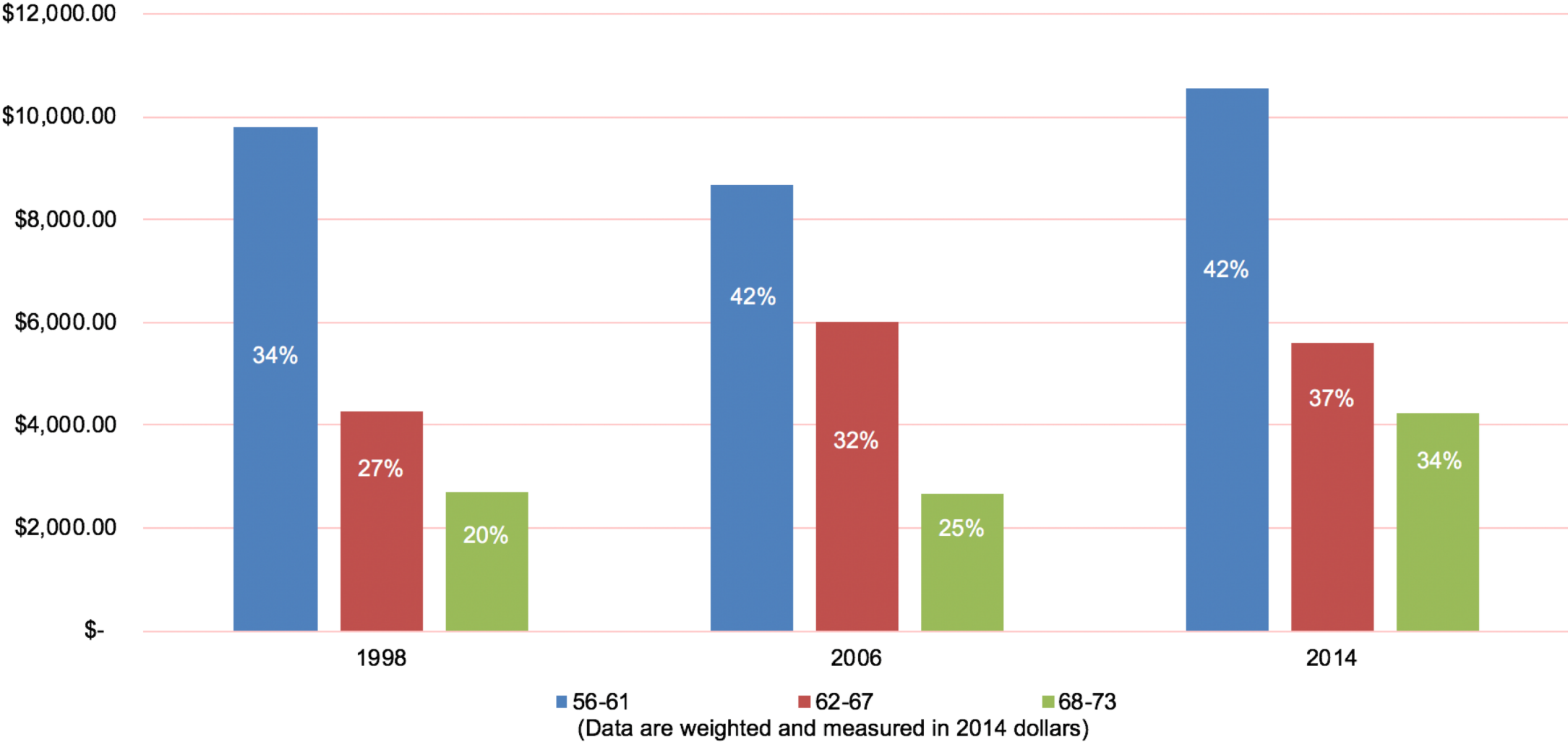
(Data are weighted and measured in 2014 dollars)

Mean Mortgage Debt (Primary)



(Data are weighted and measured in 2014 dollars)

Mean Other Debt



Cognitive Ability and Total Debt



VARIABLES	(1) Total Debt (\$10k) 56-73	(2) Total Debt (\$10k) 56-61	(3) Total Debt (\$10k) 62-67	(4) Total Debt (\$10k) 68-73
Cog Ability	0.150*** (0.013)	0.185*** (0.021)	0.148*** (0.019)	0.099*** (0.017)
2006	1.927*** (0.103)	2.548*** (0.230)	1.936*** (0.185)	1.044*** (0.153)
2014	1.870*** (0.129)	1.704*** (0.207)	1.953*** (0.206)	1.949*** (0.198)
Constant	12.113*** (0.597)	9.218*** (2.994)	6.690** (3.066)	11.325*** (2.966)
Demographics?	Y	Y	Y	Y
Observations	30,211	11,014	10,443	8,754
R-squared	0.124	0.133	0.113	0.088

Notes: Debt levels are winsorized at the 99% level. Robust standard errors in parentheses. For column 1, standard errors are clustered at the individual level. *** p<0.01, ** p<0.05, * p<0.1

Cognitive Ability and Total Debt



VARIABLES	(1) Total Debt (\$10k) 56-73	(2) Total Debt (\$10k) 56-61	(3) Total Debt (\$10k) 62-67	(4) Total Debt (\$10k) 68-73
Cog Ability	0.061*** (0.014)	0.098*** (0.027)	0.064*** (0.022)	0.021 (0.020)
Cog abi * 2006	0.110*** (0.024)	0.207*** (0.050)	0.060 (0.039)	0.076** (0.032)
Cog abi * 2014	0.180*** (0.025)	0.110*** (0.042)	0.214*** (0.039)	0.180*** (0.040)
2006	0.158 (0.347)	-0.941 (0.788)	0.963* (0.586)	-0.106 (0.447)
2014	-1.004*** (0.350)	-0.144 (0.646)	-1.484*** (0.562)	-0.783 (0.560)
Constant	13.793*** (0.674)	10.923*** (3.022)	8.552*** (3.067)	12.681*** (2.973)
Demographics?	Y	Y	Y	Y
Observations	30,211	11,014	10,443	8,754
R-squared	0.125	0.134	0.115	0.090

Notes: Debt levels are winsorized at the 99% level. Robust standard errors in parentheses. For column 1, standard errors are clustered at the individual level. *** p<0.01, ** p<0.05, * p<0.1

Cognitive Ability and Total Wealth



	(1)	(2)	(3)	(4)
	Total Debt (\$10k)	Total Debt (\$10k)	Total Debt (\$10k)	Total Debt (\$10k)
VARIABLES	56-73	56-61	62-67	68-73
Cog Ability	1.435*** (0.144)	1.510*** (0.226)	1.153*** (0.234)	1.224*** (0.264)
Cog abi * 2006	0.562** (0.218)	0.013 (0.388)	0.794** (0.358)	0.580 (0.374)
Cog abi * 2014	-0.540** (0.230)	-0.874*** (0.308)	-0.782** (0.347)	-0.085 (0.435)
2006	-1.441 (3.139)	5.014 (6.077)	-7.194 (5.231)	0.683 (5.148)
2014	1.790 (2.944)	5.248 (4.490)	-0.984 (4.697)	-1.345 (5.799)
Constant	-105.852*** (6.750)	-154.848*** (22.428)	-106.612*** (26.257)	-75.813** (32.895)
Demographics?	Y	Y	Y	Y
Observations	30,211	11,014	10,443	8,754
R-squared	0.211	0.197	0.287	0.232

Notes: Debt levels are winsorized at the 99% level. Robust standard errors in parentheses. For column 1, standard errors are clustered at the individual level. *** p<0.01, ** p<0.05, * p<0.1

Cognitive Ability and Liquid Wealth



VARIABLES	(1) Total Debt (\$10k) 56-73	(2) Total Debt (\$10k) 56-61	(3) Total Debt (\$10k) 62-67	(4) Total Debt (\$10k) 68-73
Cog Ability	0.593*** (0.061)	0.538*** (0.086)	0.528*** (0.101)	0.679*** (0.125)
Cog abi * 2006	-0.141* (0.077)	-0.178 (0.140)	-0.155 (0.138)	-0.283* (0.170)
Cog abi * 2014	-0.378*** (0.092)	-0.321*** (0.120)	-0.463*** (0.141)	-0.599*** (0.180)
2006	1.146 (1.124)	1.272 (2.141)	0.120 (1.988)	3.965* (2.309)
2014	1.981* (1.188)	1.869 (1.692)	1.037 (1.933)	4.127* (2.485)
Constant	-41.467*** (2.618)	-42.299*** (8.547)	-46.020*** (10.431)	-50.887*** (13.631)
Demographics?	Y	Y	Y	Y
Observations	30,211	11,014	10,443	8,754
R-squared	0.131	0.112	0.194	0.160

Notes: Debt levels are winsorized at the 99% level. Robust standard errors in parentheses. For column 1, standard errors are clustered at the individual level. *** p<0.01, ** p<0.05, * p<0.1



- Cognitive ability is an important predictor of debt burdens in older age
 - Pattern has changed over time with increasing financial complexity
 - Those with higher cognitive ability have taken on more debt in more complex environments
- Broadly inconsistent with widespread misselling to financially unsophisticated consumers
 - Consistent with Ooijen and Van Rooij (2016) and Amromin (2018)
- Evidence from UAS: financially sophisticated (higher financial literacy) taking on more debt

Insights



- Higher cognitive ability associated with:
 - Disproportionately larger debt burdens in more complicated financial environments
 - Increased financial fragility relative to previous cohorts
- Study is descriptive not causal
- Results underscore increased financial fragility among older adults
 - Not confined solely to the less financially sophisticated



Thanks!

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