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Cognitive Function and Household Financial Decisions at Older Ages: A Cross-Country Analysis

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Abstract

As cognitive functions deteriorate in older age, households face an increased risk of wealth loss, which may vary depending on retirement income sources and pension arrangements. Using harmonized data from the United States, England, and several European countries, this paper examines the relationship between financial wealth in later life and cognitive functioning across countries, with a particular focus on the moderating role of pension systems. Our analysis explores how differences in pension structures—particularly the extent to which they shift investment responsibility to individuals—may affect financial well-being amid cognitive decline. We find that individuals in the US experience the largest decline in wealth following the onset of cognitive decline compared to individuals from other countries. We argue that this disparity is largely driven by the structure of retirement funding in the US, which requires individuals to make more complex decisions about the decumulation of retirement assets. Our findings inform policies aimed at enhancing financial autonomy and decision-making among the aging population.

Keywords: Cognitive decline; financial decision-making; retirement; cross-country analysis
JEL Codes: D14, E21, G51, G53, I31

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Cognitive Function and Household Financial Decisions at Older Ages: A Cross-Country Analysis

Financial security is an essential aspect of healthy aging. Individuals transitioning into retirement must navigate complex financial decisions that shape their long-term economic well-being. Effective financial decision-making in retirement requires managing household assets, assessing risk, as well as allocating and decumulating funds to ensure a sustainable income throughout one's remaining lifespan. However, these decisions become increasingly challenging as cognitive function declines with age. Cognitive impairment, ranging from mild cognitive decline to more severe conditions such as Alzheimer's disease and related dementias (ADRD), can significantly impact memory, executive function, and attention thereby compromising financial judgment, and increasing the risk of financial mismanagement, fraud, wealth depletion, and suboptimal decumulation of assets. Given the projected growth in the aging population and the prevalence of ADRD (Alzheimer's Association 2024), understanding the interplay between cognitive decline and financial decision-making and its potential variations across institutional settings is key to inform policy interventions ensuring independent living at older ages.

Retirement systems differ across countries in the degree to which they require financial sophistication and complex decision-making. The recent progressive shift from defined-benefit (DB) to hybrid and fully defined-contribution (DC) pension schemes has placed greater responsibility on individuals to manage their retirement assets (Lusardi 2019; Pension Research Council 1998; PensionsEurope 2024). In countries where DC plans predominate, retirees must make ongoing decisions about asset allocation, withdrawal rates, and risk management—tasks that become more challenging with cognitive decline (McArdle, Smith, and Willis 2009). The United States, for example, has a retirement system increasingly reliant on individual financial management through 401(k) plans and Individual Retirement Accounts (IRAs), whereas European countries, although slowly shifting towards DC models, still provide comparatively stronger social protections through public pension guarantees and DB schemes (CRS 2023; PensionsEurope 2024). These structural differences raise important questions about how pension design influences financial security as cognitive function deteriorates.

Despite growing research on cognitive decline and financial vulnerability, less attention has been paid to cross-country comparisons of how pension schemes may moderate the effects of cognitive decline on wealth retention. Understanding these differences is essential for designing policies that safeguard retirees from financial risks and promote their economic well-being. This study addresses this research gap by investigating (1) how cognitive decline affects financial wealth across different countries, (2) the extent to which country pension structures mitigate or exacerbate financial vulnerability as individuals' cognitive ability declines. To answer these questions, we first review the literature on cognitive decline and financial decision-making. We then present empirical evidence on the magnitude of wealth decrease following the onset of cognitive decline using harmonized data from the Health and Retirement Study (HRS) International Family of Studies covering the US, England, and several European countries. Our analysis suggests that US retirees experience a significantly larger decrease in financial wealth after cognitive decline compared to their counterparts in England and Europe. In the final section, we explore potential explanations for these disparities and discuss policy implications, focusing on how different pension systems may offer older adults different degrees of protection from financial mismanagement.

Cognitive Aging and Household Finances

Cognitive function encompasses a range of mental processes essential for acquiring and processing information. It includes several key domains, such as perception, memory, learning, attention, inference, reasoning and decision-making (Carroll 1993; Craik and Salthouse 2011). These functions enable individuals to interpret their environment, retain and apply new information, and make informed choices. Cognitive function, particularly fluid cognitive ability (Blair 2006; Gustafsson 1984), generally declines with age (Bugg et al. 2006; Kievit et al. 2018). This decline can be attributed to normal cognitive ageing (Deary et al. 2009), as well as neuropathological conditions including but not limited to ADRD. These conditions often begin decades before cognitive impairment emerges and progressively worsen with age (Boyle et al. 2021; Morley et al. 2015; Salthouse 2009). During cognitive decline, crystallized abilities mostly remain intact, but key functions such as memory, attention, motor function, processing speed, executive function, and reasoning progressively deteriorate (Christensen 2001; Glisky 2007; Nichols and Rabin 2024).

Cognitive function can impact financial decision-making (Hung, Luoto, and Parker 2018; Smith, McArdle, and Willis 2010; Tang 2021), including decisions related to retirement planning (Hudomiet, Parker, and Rohwedder 2018). As cognitive function deteriorates, essential skills related to numeracy, memory, and executive function – all necessary for sound financial management – are compromised. These impairments hinder individuals' ability to retrieve relevant information, apply financial knowledge and skills, and evaluate financial options to achieve optimal outcomes. Older adults experiencing cognitive decline may make suboptimal financial decisions, such as premature asset withdrawals, poor investment choices, miscalculating financial risks, or falling victim to financial exploitation.

Cognitive aging also influences risk aversion and temporal discounting, meaning individuals may alter their financial behaviors in response to expected reductions in life expectancy, even in the absence of cognitive impairment (James et al. 2015). Clearly, not all financial outcomes resulting from cognitive decline are necessarily the result of poor financial decisions. Given the healthcare and long-term care costs associated with ADRD (Hurd et al. 2013; Oney, White, and Coe 2022), some individuals may be forced to increase consumption and healthcare spending at older ages. At the same time, recent evidence suggests that financial losses among wealthier older individuals unaware of their cognitive decline stem from poor financial decisions, rather than from rational disinvestment strategies (Mazzonna and Peracchi 2024). Several studies indicate that financial mismanagement often precedes individuals' awareness of cognitive decline, making it one of the earliest indicators of cognitive impairment (Fenton et al. 2022; Nicholson 2012; Okonkwo et al. 2008).

Empirical findings suggest that financial mismanagement is a common pathway linking cognitive decline to financial well-being. A systematic review found that mild to moderate Alzheimer's disease was associated with impaired financial judgement and management skills (Sudo and Laks 2017). In the US, older adults experiencing steeper cognitive decline were more likely to prematurely withdraw from their retirement and social security funds (Hung et al. 2018). Additionally, Medicare beneficiaries diagnosed with ADRD tended to exhibit financial distress years before their diagnosis, as evidenced by missed bill payments and subprime credit scores (Nicholas et al. 2021). These difficulties extend to mortgage and credit card accounts, leading to higher rates of financial penalties (Gresenz et al. 2024). Other work has documented that financial mistakes made by cognitively impaired individuals included suboptimal usage of credit card balance transfer offers and increased interest payments (Agarwal et al. 2009).

Several studies in the US have established the link between cognitive decline and wealth loss. Angrisani and Lee (2019) found that households whose members experienced cognitive decline saw up to 18% drop in their financial wealth. A more recent case-control study on Medicare enrollees found that individuals who later developed dementia experienced a steeper decline in wealth leading up to their diagnosis when compared to a control group that had similar household net worth 8 years prior (Li et al. 2023). Other work examining the association between cognition and wealth trajectories revealed that those with increasing cognitive impairment had a higher chance of experiencing stable or gradually worsening wealth loss (Westrick et al. 2024).

Despite these findings, the factors that moderate wealth loss due to cognitive decline remain unexplored. In a previous study we conducted, we found that wealth drops after cognitive decline are larger in US households that received less pension or annuity income (Angrisani and Lee 2019). One explanation is that households relying on pension or annuity income may find it easier to budget compared to households that are dependent on distributions from 401(K) plans and IRAs. Most pensions and annuities offer a clear payment structure after retirement, while 401(K) plans and IRAs require more complex decision-making regarding when and how to decumulate funds. These results lead to a key research question: To what extent does pension structure influence financial wellbeing amid cognitive decline? Tackling these questions requires observing individuals during their retirement years in different institutional settings.

Pension Structures and Financial Decision-making

Pensions structures across the US, England, and Europe differ in the decision-making complexity they place on retirees. While most countries have been moving from traditional annuity-based DB plans to account-based DC plans, countries have done so at different rates (Castellino, Fornero, and Wilke 2020). The US pension system is the most decentralized and increasingly reliant on DC plans such as employer-sponsored 401(k)s and IRAs. These plans require retirees to make complex decisions regarding investment allocations, withdrawal rates, and tax implications (Poterba 2005). Without automatic stabilizers such as guaranteed annuitization, retirees may sub-optimally decumulate assets. As a result, they may face higher risk of financial mismanagement and wealth depletion. In contrast, many European countries such as Germany, France, and Sweden, maintain well-developed DB-style public pensions or hybrid pension models, where DC components are gradually being introduced (Castellino et al. 2020). However, these hybrid models still provide stable income flows with fewer complex financial decisions from retirees. In DB pensions, participants make relatively few financial decisions beyond choosing when to retire. These systems ensure a consistent income flow that requires less complex financial decision-making. The UK presents an intermediate case where the shift from DB to DC schemes has been accompanied by some protective policies. For example, the State Pension remains a foundational income source, and automatic enrollment in workplace pensions was introduced under the Pension Act of 2008 (Thurley 2025). However, the repeal of near-compulsory annuitization of defined contribution pensions in 2015 with the introduction of 'Pensions Freedoms' (Cribb et al. 2023; Hurwitz 2019), aligns the UK more closely with the US, increasing individual financial responsibility in retirement planning.

One of the most critical and complex financial decisions for retirees relying on DC schemes is how to spend their accumulated savings (Mitchell and Lusardi 2022). Cognitive decline may further exacerbate the risks of mismanagement at this decision point. While individuals can convert private retirement savings into lifetime income annuities, behavioral finance research suggests that voluntary annuitization rates remain low, particularly in countries like the US (Brown et al. 2021; Hu and Scott 2007; Hurwitz 2019). Therefore, the extent to which financial well-being is protected amid cognitive decline likely depends on the structure of national pension systems and the presence of social safety nets. Our hypothesis is that households experiencing cognitive decline are more likely to suffer financial losses in countries with pension systems that demand more complex financial decision-making exposing retirees to financial risks. We test this hypothesis by comparing individuals' wealth before and after the onset of cognitive decline using data from the

Health and Retirement Study (HRS) International Family of Studies covering the US, England, and several European countries. The following sections describe the data and empirical findings.

Data

For this analysis, we utilize harmonized data derived from three longitudinal surveys: the Health and Retirement Study (HRS) in the United States, the English Longitudinal Study of Ageing (ELSA) in England, and the Survey of Health, Ageing and Retirement in Europe (SHARE). These surveys are part of the HRS-family studies and provide rich, individual-level panel data on aging, health, and financial outcomes. Hence, they constitute an ideal source of information for our research purposes as they allow us to observe the evolution of financial wealth and cognition of aging adults in different institutional settings and pension systems.

The HRS is a nationally representative, biennial panel study of Americans aged 50 and older and their spouses, first launched in 1992. To maintain representativeness, the study incorporates refresher cohorts of individuals aged 50–56 every six years. The survey collects extensive data on demographics, health status, cognitive function, retirement behavior, and financial well-being, making it a key resource for studying the intersection of aging and economic security. ELSA follows a similar structure, tracking a nationally representative sample of individuals aged 50 and older in England. Established in 2002, ELSA is conducted biennially and captures comprehensive information on health, retirement, cognitive function, and financial circumstances. The dataset is designed to facilitate cross-national comparisons with HRS and other international aging studies. SHARE survey extends this framework to multiple European countries, also collecting longitudinal data from individuals aged 50 and older and their spouses. Initiated in 2004, SHARE has expanded over time to include a growing number of European nations and Israel, with data collected biennially that covers a wide range of topics, including wealth, pension arrangements, cognitive health, and labor market participation. Similarly to HRS and ELSA, SHARE enables cross-country comparisons of aging trajectories and financial outcomes. These three surveys have respective harmonized datasets that allow for robust cross-national analysis. For the HRS, we use the RAND HRS version P (Bugliari et al. 2016), while for ELSA, we use the Harmonized ELSA Version G.3 (Wilkens et al. 2023), and for SHARE we use the Gateway Harmonized SHARE Version G (Wilkens et al. 2024).

Harmonized Measures

HRS-family surveys employ a range of measures to assess cognitive status. In this study, we use the Total Word Recall Test, a harmonized cognitive measure across HRS, ELSA, and SHARE, widely used to assess episodic memory as a proxy for general cognitive function (Blankson and McArdle 2014; Crimmins et al. 2011). The test consists of two subcomponents: the immediate recall test and the delayed recall test. In the immediate recall test, the interviewer reads a list of ten nouns (e.g., car, army) to the respondent, who is then asked to recall as many words as possible in any order. In the delayed recall test, following a five-minute interval in which the interviewer asks other survey questions (e.g., about depression symptoms and additional cognitive measures), the respondent is again asked to recall as many words as possible from the original list. The two test scores are summed to create a total recall score (0-20) at each survey wave (repeated measures).

Wealth was measured using a comprehensive set of harmonized asset and debt categories. Given our focus on the impact of cognitive decline on financial decision-making, we restricted our analysis to non-housing financial wealth, excluding housing wealth and other tangible assets, which are generally less susceptible to mismanagement in retirement. In the HRS, financial wealth includes balances in checking, savings, money market accounts, as well as certificates of deposit

(CDs), government savings bonds, Treasury bills, bonds and bonds funds, stocks, mutual funds, and investment trusts. Wealth in individual retirements accounts and debt are reported separately. In ELSA and SHARE, equivalent asset categories are collected, with modifications tailored to each country's financial system. More details about each asset category can be found in the ELSA and SHARE harmonized codebooks (Wilkens et al. 2023, 2024). For instance, in the UK, widely used personal savings vehicles include Individual Savings Accounts (ISAs), Personal Equity Plans (PEPs), and Tax-Exempt Special Savings Accounts (TESSAs). While PEPs and TESSAs were phased out in 1999, ISAs largely replaced them as tax-advantaged savings accounts. Like US IRAs, ISAs allow post-tax contributions and tax-free growth, but do not impose retirement withdrawal restrictions. Given their importance in the UK savings landscape, ISAs are included in our wealth measure for ELSA respondents. In SHARE, IRA-equivalent accounts are elicited and harmonized across countries along with other long-term savings such as the value of contractual savings for housing, and the value of whole life insurance policy holdings.

In addition to wealth measures, last calendar year income is included in the analysis. To facilitate cross-country comparisons, all financial values are inflation-adjusted to 2020 equivalents but reported in local currency—U.S. dollars (HRS), British pounds (ELSA), and Euros (SHARE). Financial data are reported by the household's designated financial respondent, typically the most financially knowledgeable member. In HRS, financial information is always collected at the household level, whereas in earlier waves of ELSA and SHARE, financial data were sometimes collected separately before being aggregated at the couple-unit level for comparability across surveys.

Sample

We restrict our sample in each of the three surveys to married respondents, excluding individuals who have been widowed, separated, or remarried to avoid potential confounding effects related to changes in household composition. Wealth can fluctuate significantly following remarriage or the death of a spouse, making it important to limit our analysis to individuals with consistent marital histories. To examine the relationship between cognitive decline and wealth changes over time, we further restrict the sample to respondents who participated in at least three survey waves. Additionally, we exclude responses collected after 2020 to avoid potential distortions caused by pandemic-related fluctuations in financial outcomes. We also exclude proxy interviews, as these respondents lack reliable cognitive function scores. After removing cases with missing values in wealth, cognitive function, and key demographic variables (age, gender, race in HRS, education, income, and self-reported poor health), and after trimming households in the top and bottom 0.05% of wealth distributions to minimize the effect of outliers, our final analytic sample consisted of:

- 10,450 HRS respondents, contributing 68,617 individual-time observations,
- 5,152 ELSA respondents, contributing 25,185 individual-time observations, and
- 16,096 SHARE respondents, contributing 54,421 individual-time observations.

It is important to note that in SHARE, several countries conducted surveys in fewer than three waves, leading to their exclusion from the analysis. As a result, the SHARE sample is limited to respondents from the following countries: Austria, Belgium, Czech Republic, Denmark, Estonia, France, Germany, Greece, Israel, Italy, Luxembourg, Netherlands, Poland, Slovenia, Spain, Sweden, and Switzerland. Table 1 shows sample descriptives for the respondents included from each survey.

Table 1 here

Measuring Cognitive Decline

Cognitive changes associated with impairment or dementia often begin years before detection or formal diagnosis (Ewers et al. 2011; Liu et al. 2023). However, the exact timing of cognitive decline remains uncertain, with some studies suggesting that certain aspects of decline can emerge as early as the 20s and 30s (Salthouse 2009). Models of cognitive function across the lifespan indicate significant heterogeneity in cognitive trajectories, with substantial individual variation in the rate and pattern of decline (Tampubolon, Nazroo, and Pendleton 2017; Zaninotto et al. 2018; Zheng, Cagney, and Choi 2023). Individual differences in this within-person change stem from different etiologies, personal, environmental, and contextual factors that shape cognitive ageing. Despite this variability, longitudinal evaluations of patients' cognitive function over time suggest that older adults often experience discrete change points, where the rate of cognitive decline accelerates, typically preceding eventual diagnosis of impairment (Karr et al. 2018).

To assess the relationship between cognitive decline and wealth loss, we differentiate respondents' longitudinal cognitive trajectories into pre-decline and post-decline periods—distinguishing between the phase before and after the acceleration in cognitive deterioration. This classification is achieved through within individual changepoint models applied to repeated measures of the Total Word Recall Scores. The underlying assumption is that a breakpoint in the downward trajectory of episodic memory signals the onset of a phase where general cognitive function deteriorates, potentially impacting financial decision-making. Notably, this decline does not necessarily need to reach a threshold indicative of Mild Cognitive Impairment (MCI) or dementia, as research has shown that financial consequences of memory disorders often emerge years before clinical diagnosis (Gresenz et al. 2024; Nicholas et al. 2021).

Changepoint models are widely used to assess cognitive decline preceding mild cognitive impairment, dementia, and death (Dominicus et al. 2008; van den Hout, Muniz-Terrera, and

Matthews 2013; Karr et al. 2018; Thorvaldsson et al. 2008). These models rely on likelihood-based estimation methods coupled with penalty functions to identify points where a time series exhibits a statistically significant shift in distributional properties. In our analysis, the key objective is to segment the observed cognitive trajectories into two distinct phases allowing for the detection of accelerated decline that may indicate an impending cognitive disorder. In this study we apply the changepoint models on the repeated measures of the Total Word Recall Score using the changepoint package in R (Killick and Eckley 2014). Specifically, we use the 'At Most One Change' (AMOC) method, which formulates changepoint detection as a hypothesis test, where the null hypothesis assumes no changepoint (i.e., no significant cognitive decline). A general likelihood ratio test statistic is then computed to detect mean differences before and after the identified changepoint (Hinkley 1970).

Detected changepoints do not inherently indicate whether the shift in mean cognitive scores is positive or negative. Individual trajectories of cognitive function scores rarely follow a strictly monotonic decline, as cognitive assessments are often influenced by measurement error and practice effects (Feeney et al. 2016; Goldberg et al. 2015). In other words, there is significant within-person variability over time, making it challenging to distinguish true cognitive deterioration from short-term fluctuations. To address the risk of detecting false positive changepoints due to temporary increases in cognitive scores, we limit our analysis to changepoints followed by a subsequent decline in the Total Word Recall score. We also retain cases where the score after the changepoint, while higher than the detected changepoint value, remains lower than the score from the wave preceding the changepoint. This approach ensures that detected changepoints more accurately reflect meaningful declines in cognitive function rather than transient measurement artifacts. Figure 1 shows the trajectories of Total Word Recall Score as well as change points for a randomly selected sample of respondents from the HRS. Using this approach to changepoint detection, around 45% of the HRS sample experiences a detectable cognitive decline, compared to 29% and 22% in the ELSA and SHARE samples.

Figure 1 here.

Wealth Changes after Cognitive Decline

In this section, we examine potential changes in household wealth following a significant decline in cognitive function among financial respondents. Using the detected changepoint for each respondent, we define a binary variable distinguishing between the pre-decline period (before cognitive deterioration is observed) and the post-decline period (after the detected changepoint). To assess the impact of cognitive decline on financial well-being, we estimate the following regression models with wealth as the outcome variable and the decline period as an independent variable. These models pool observations across respondents and survey waves and are estimated separately for each survey (HRS, ELSA, and SHARE).

$$W_{it} = \alpha + \beta_0 PreCD_{it} + \beta_1 PostCD_{it} + \gamma' X_{it} + t + \nu_{it}$$

Individuals who do not experience cognitive decline are only observed in the pre-decline period (PostCD = 0). Therefore, the regressions effectively compare wealth levels after cognitive decline to both pre-decline wealth levels and wealth levels of individuals who never experience cognitive decline. To account for potential confounders, we include a set of time-varying control variables that may affect the relationship between cognitive decline and wealth. These include age, gender, secondary education attainment, pre-decline household income, poor health status, and race (for HRS only). Additionally, all regressions include wave fixed effects. SHARE regressions also include country fixed effects to control for institutional and economic differences across European countries.

To assess how cognitive decline affects different components of wealth, we estimate separate regressions for various asset categories. First, we analyze total net financial wealth, defined as all non-housing assets minus debt. Next, we disaggregate wealth into distinct components by estimating separate regressions for checking and savings assets, liquid investment assets (e.g., stocks, bonds, CDs), debt, and retirement accounts (IRAs in HRS and SHARE, ISAs in ELSA). Differences in estimates for the post-decline period across asset classes provide insight into the extent and composition of wealth reductions following cognitive decline in each survey.

While SHARE countries have broadly similar pension structures, there may be significant cross-country heterogeneities. To examine how different pension schemes influence potential wealth changes, we categorize SHARE countries into three groups. This classification is based on the ratio of the country's average total net financial wealth to the proportion of yearly income derived from employer and public pensions and annuities after retirement. The underlying rationale for this classification is that countries where retirees hold a larger proportion of their wealth in personal savings relative to their yearly pension income may feature pension systems placing relatively more investment responsibilities on individuals and, therefore, more closely align with the US system. In these countries, retirees are more likely to bear greater responsibility for managing their financial resources in retirement (particularly with respect to decumulation decisions) as opposed to relying predominantly on government and employer pensions/annuities. To assess how pension system structure might moderate the impact of cognitive decline on wealth, we estimate a regression model with an interaction term on this country-level financial complexity measure, while excluding country fixed effects. Figures 2 and 3 illustrate how each SHARE country ranks on this financial complexity indicator, which groups countries into three categories based on tertiles. By this measure, countries like Switzerland, Denmark, and Luxembourg resemble the US pension structure more closely than countries like Greece, Poland, and Italy, where retirees rely more heavily on public and employer pensions rather than personal accumulated wealth.

Figures 2 and 3 here.

Table 2 presents the estimated differences in financial wealth after cognitive decline in the HRS, comparing post-decline periods to both pre-decline and no-decline periods. Assuming that unobserved characteristics do not confound these differences, cognitive decline is associated with an average reduction of $23,300 (95% CI: -$34,687, -$11,913) in total net financial wealth. Breaking down total net financial wealth into its components, we find that wealth losses occur consistently across asset classes, with the largest reductions observed in investment wealth, which declines by $12,800 (95% CI: -$19,483, -$6,117), followed by IRA wealth, which decreases by $8,950 (95% CI: -$14,791, -$3,109), and checking and savings balances, which decline by $2,150 (95% CI: -$3,953, -$347). Although less expected, omitted regressions from the tables show that debt also decreases post-decline, but the effect is considerably smaller, with an estimated reduction of $410 (95% CI: -$645, -$175).

Table 2 here.

Table 3 presents the estimated impact of cognitive decline on financial wealth in ELSA. Following cognitive decline, total net financial wealth declines by $9,290 (95% CI: -$17,659, -$920), suggesting a significant reduction in financial resources. When examining specific asset categories, losses are particularly concentrated in investment assets which decline by $3,080 (95% CI: -$5,804, -$356). Checking and savings balances decrease by $1,490 (95% CI: -$3,822, $842), while wealth held in Individual Savings Accounts (ISAs) declines by $2,240 (95% CI: -$4,553, $73). While qualitatively consistent with the results based on HRS data, these effects were not statistically significant, suggesting more variability in declines across these accounts in England.

Table 3 here.

In SHARE countries, cognitive decline is associated with a $2,880 (95% CI: -$5,487, -$273) reduction in total net financial wealth, significant at the 5% level (Table 4). Changes in checking and savings balances and investment wealth are relatively small and not statistically significant, indicating that short-term fluctuations in these asset categories may not be directly linked to cognitive decline. However, IRA wealth declines significantly, with an estimated reduction of $2,560 (95% CI: -$4,069, -$1,051), highlighting that retirement-specific savings are more affected.

Table 4 here.

The specification incorporating country-level pension structures as an interaction term (Column 5) suggests that, in SHARE, cognitive decline in the group with the least degree of investment responsibility onto retirees is associated with a $2,960 (95% CI: -$4,665, -$1,255) decrease in total net financial wealth. As the interaction terms were not significant, there was no evidence of a monotonic worsening of financial outcomes after cognitive decline in countries where the ratio of financial wealth to pension income is larger. Thus, the data do not support our hypothesis that in these countries respondents may be more vulnerable to the adverse consequences of cognitive impairment on financial decision making. Figure 4 shows marginal predicted total net-financial wealth from the regression in Table 4, Column 5.

Figure 4 here.

Our findings highlight the financial consequences of cognitive decline in each country context. In line with our expectation, the US exhibits the largest and most consistent decrease in financial wealth following the onset of cognitive decline. Respondents in the US experience an average $23,300 decrease in total net financial wealth, with investments, IRAs, and liquid assets all showing considerable reductions. This is a considerable decline in wealth – around 14.5% from an average total net financial wealth of $160,000. This aligns with the hypothesis that in systems where individuals must actively manage their savings, cognitive decline has greater financial consequences. By contrast, in England (ELSA) and European countries (SHARE), financial losses following cognitive decline are smaller and more heterogenous, possibly reflecting more structured public and employer-based pension systems that limit the need to make complex decumulation decisions.

Beyond confirming the expected patterns in the US, our findings reveal important cross-national differences in the composition of financial losses. Investment wealth—comprising stocks, mutual funds, shares, bonds, trusts, and gilts—is the most affected asset class in the US and England, suggesting that respondents in these countries are more likely to divest from investments following cognitive decline. In the US, these accounts are more liquid than IRAs since they do not have withdrawal restrictions tied to retirement age. One possibility is that US respondents experiencing cognitive decline before reaching retirement age prioritize withdrawing from these accounts first, as they can do so without facing tax penalties. In England, while some Individual Savings Accounts (ISAs) lack retirement age restrictions, we do not observe a significant decline in these accounts post-cognitive decline. By contrast, investment wealth remains relatively stable in SHARE countries, likely due to lower individual-level variance in investment holdings and greater reliance on public pensions rather than self-managed investments. However, similar to the US, IRA balances in SHARE countries decline significantly following cognitive impairment, suggesting that these accounts may be more vulnerable to financial mismanagement post-cognitive decline. It is important to note, however, that IRAs are more likely to be utilized by a highly educated minority of older adults in these countries (Homocianu and Plopeanu 2021). Additionally, this category in SHARE includes other types of assets such as housing contractual savings and whole life insurance policy holdings, potentially limiting our ability to perfectly compare it with the equivalent category in HRS and ELSA.

There was no evidence of debt disparities post-cognitive decline in all three surveys. One explanation for this is that retirees with sufficient liquidity may deplete their savings rather than relying on new debt accumulation, particularly if cognitive decline may also limit access to credit. Additionally, the interaction model incorporating financial complexity in SHARE was not statistically significant, meaning we do not find strong evidence that countries giving higher financial responsibility in retirement experience greater financial losses post-cognitive decline. This was unexpected, as we hypothesized that in countries where respondents rely more on financial assets relative to pension income, wealth would decline more steeply after cognitive impairment. There are several possible explanations for this null finding. First, our financial complexity classification may not fully capture the degree of investment/asset management responsibility that European systems place onto retirees. Figure 2 shows that countries in the highest financial complexity tertile still average between 80-90% of retirement income from public and employer pensions and annuities, suggesting that these countries have higher average wealth but also still have a considerable amount of guaranteed income in retirement. Second, institutional features such as universal healthcare, long-term care subsidies, and stronger consumer protections may buffer the financial effects of cognitive decline in European countries. Finally, cultural differences in family support networks may provide an additional layer of financial protection for older adults experiencing cognitive impairment.

Another key consideration is that the observed wealth losses may not necessarily be a result of financial mismanagement. While cognitive decline is associated with impaired decision-making and increased susceptibility to financial mistakes, individuals may also intentionally spend of their wealth following cognitive decline. Individuals with a shorter life expectancy may spend down their assets more aggressively, rather than making errors in financial management. This highlights the complexity of interpreting wealth reductions as either a symptom of financial vulnerability or a rational response to changing circumstances.

Despite the robustness of our results, several limitations should be acknowledged. Reverse causality remains a concern, as prior research suggests that negative wealth shocks may accelerate cognitive decline, rather than cognitive decline causing wealth loss (Pan et al. 2023; Tc et al. 2023). Additionally, omitted variable bias is a possibility, as financial decision-making is influenced by other unobserved factors such as risk preferences, financial literacy, and other socio-economic or health factors that may also be associated with cognitive decline. Another important limitation is that we cannot rule out selection bias when it comes to which assets individuals decide to invest in. Within all the countries observed there is often variation in what systems individuals participate in and there is selection into these systems. Individuals who are financially savvy may be more likely to opt into investment options that give flexibility in decision-making. It is possible these individuals maybe more protected from cognitive decline in the first place. Finally, attrition due to mortality or survey dropout may disproportionately remove individuals experiencing the most severe cognitive impairment, potentially underestimating the full extent of wealth loss.

Conclusions

Overall, our findings contribute to the growing literature on cognitive aging and financial decision-making. We find that retirement system design as proxied by country, can play an important role in shaping financial vulnerability in later life. While cognitive decline is associated with significant financial losses in all contexts, the degree to which retirees must self-manage their wealth can play a crucial role in determining the severity of these losses across different types of accounts. These findings suggest that policymakers should consider strengthening financial protections for older adults with cognitive decline, particularly in countries where retirees rely heavily on private savings. Future research should explore whether interventions such as automatic annuitization, fiduciary protections, or financial decision-making support can mitigate the financial risks associated with cognitive aging.

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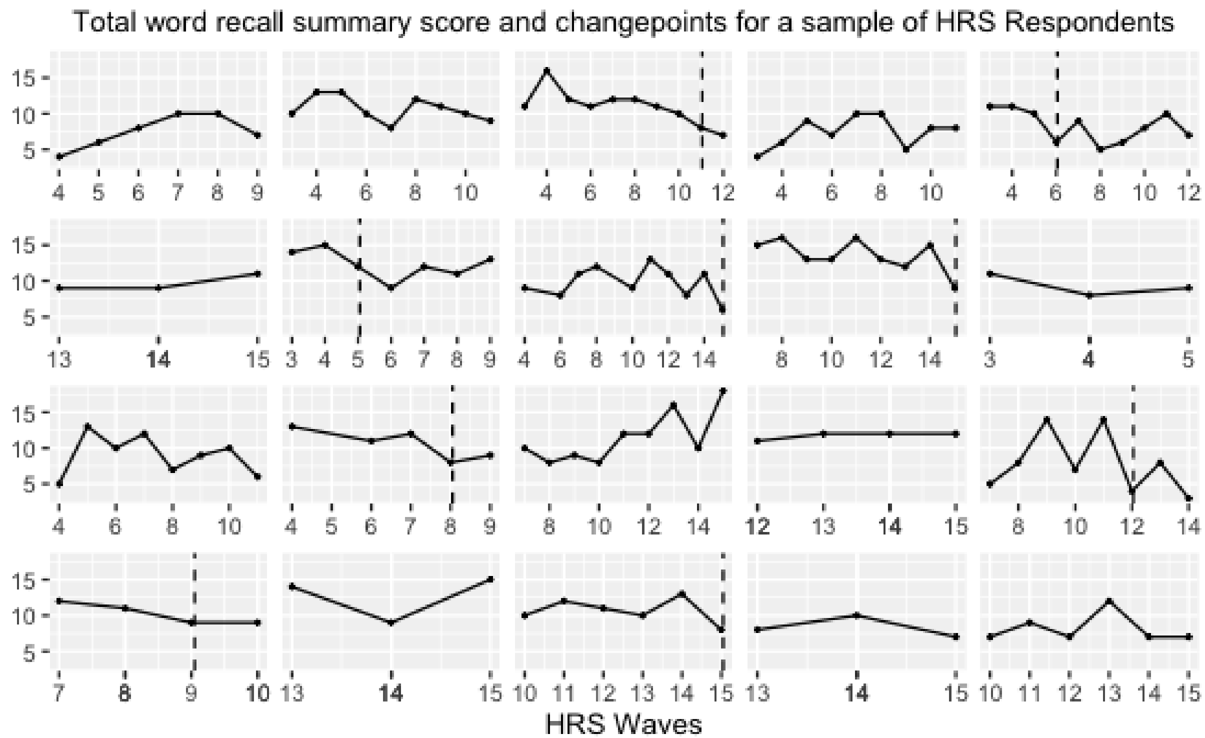
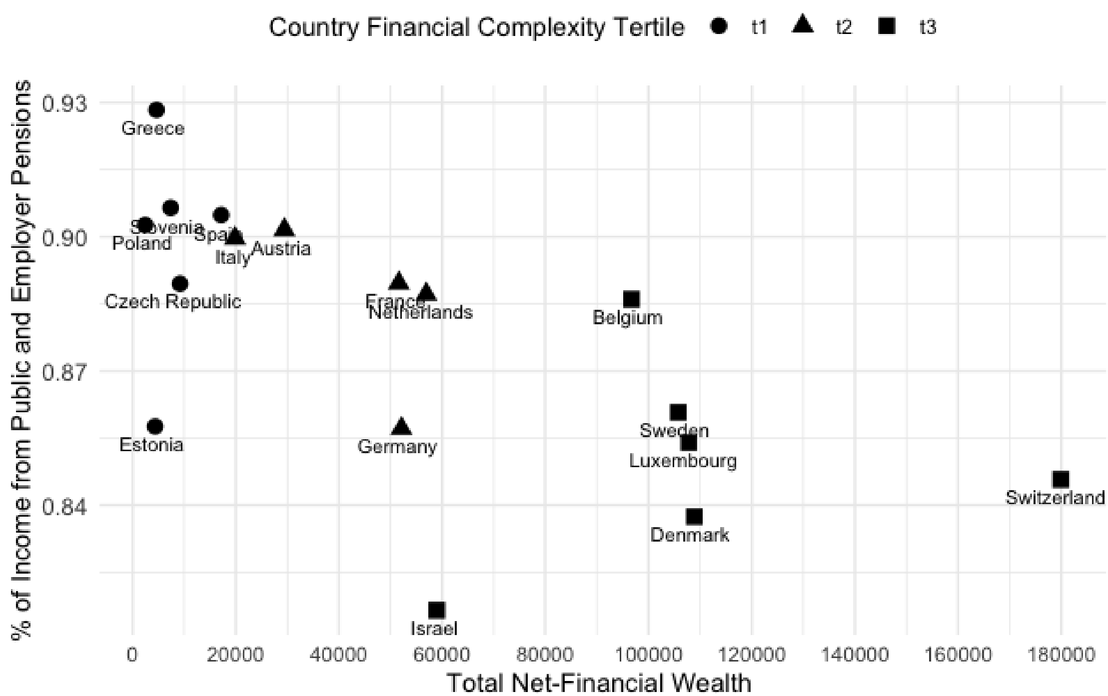
Figure 1. Changepoint model results for a random sample of HRS Respondents.



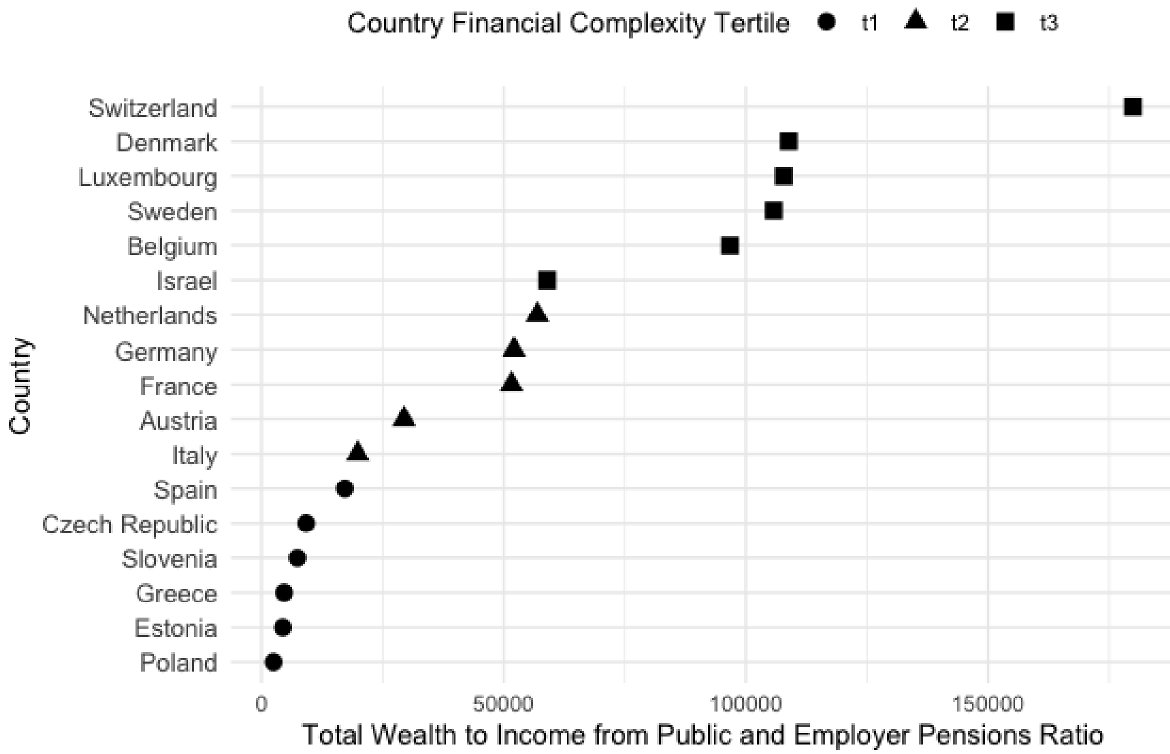
Source: Authors' calculations

Figure 2. Graph showing SHARE Countries Average Total Wealth vs. % of income from Public and Employer Pensions



Source: Authors'calculations

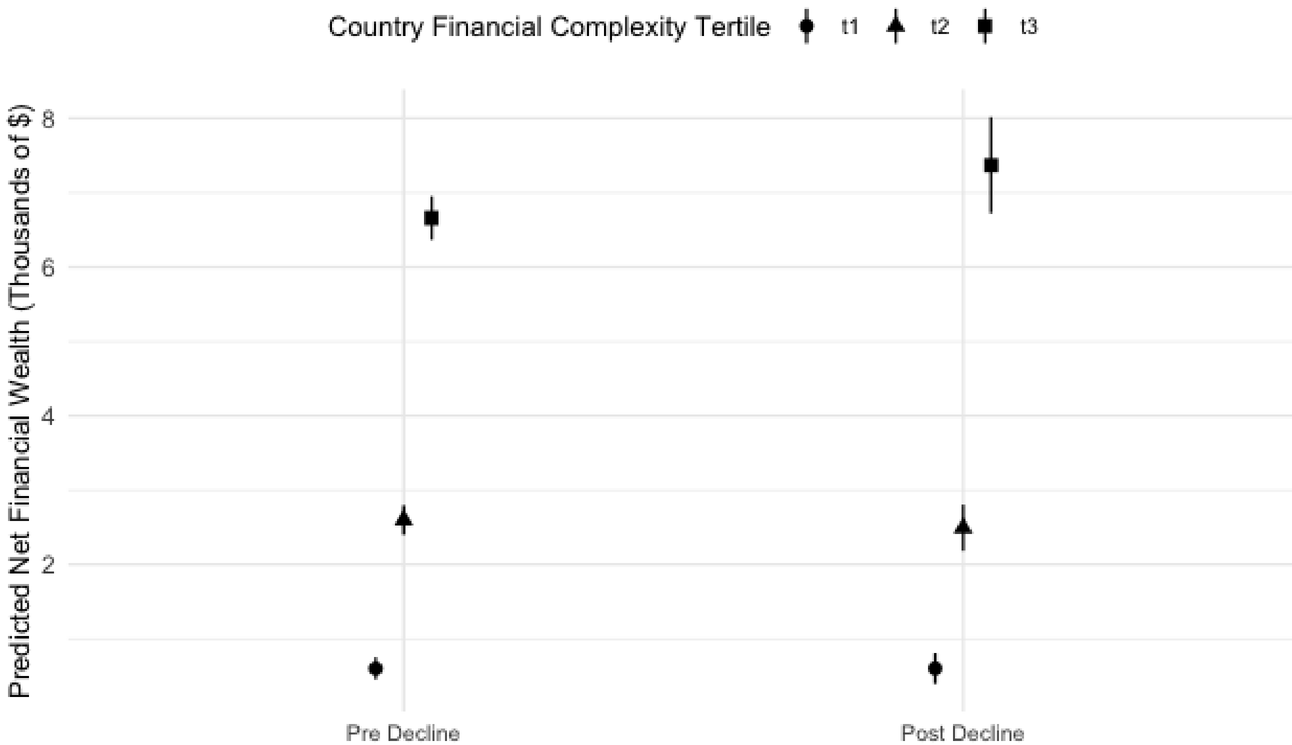
Figure 3. Graph showing SHARE Countries by Country Financial Complexity Tertile



Note: This graph displays the ratio of average total net financial wealth to the percentage of income derived from public and employer pensions across countries. Countries are ranked from highest to lowest based on this ratio and categorized into three groups according to tertiles of the distribution.

Source: Authors' calculations

Figure 4. Graph showing Marginal Predicted Wealth by Country Financial Complexity Tertile



Note: Marginal predicted total net financial wealth for pre- and post-cognitive decline groups, based on the model incorporating the Country Financial Complexity tertile interaction term (Table 4, Column 5). Predictions are computed at the individual level in SHARE using each respondent's covariate values and then averaged within each country tertile grouping.

Source: Authors' calculations

Table 1: Sample Descriptives at Baseline

Characteristic	HRS N = 10,450	ELSA N = 5,152	SHARE N = 16,755
Age Category			
51_60	6,842 (65%)	2,979 (58%)	7,519 (46%)
61-70	2,273 (22%)	1,489 (29%)	5,743 (35%)
71-80	1,172 (11%)	608 (12%)	2,589 (16%)
81-90	161 (1.5%)	76 (1.5%)	334 (2.1%)
91+	2 (<0.1%)		
Gender			
Female	4,306 (41%)	2,359 (46%)	8,167 (50%)
Male	6,144 (59%)	2,793 (54%)	8,018 (50%)
Race			
1.White/Caucasian	8,142 (78%)		
2.Black/African American	1,484 (14%)		
3.Other	824 (7.9%)		
Upper Secondary Education or Higher	5,240 (50%)	2,179 (42%)	10,146 (63%)
Poor Health	2,217 (21%)	971 (19%)	4,922 (30%)
Total Word Recall Score	10.7 (3.3)	10.8 (3.3)	9.5 (3.3)
Household Income (Tens of Thousands)	10.6 (11.6)	3.5 (3.0)	3.4 (4.0)
Total Net Financial Wealth (Tens of Thousands)	16.0 (30)	9.0 (15.0)	5.0 (9.0)
Investment Wealth (Tens of Thousands)	7.0 (19)	2.1 (5.2)	1.3 (4.3)
Checking and Saving Wealth (Tens of Thousands)	2.6 (5.1)	2.4 (4.5)	1.6 (3.1)
IRA/ISA Wealth (Tens of Thousands)	6.0 (14)	1.9 (3.40)	2.0 (5.4)

n (%); Mean (SD)

Note: This table shows sample descriptives from respondents included in the study across each survey at baseline.

Source: Authors' calculations

Table 2: Wealth After Cognitive Decline Measured using Total Word Recall Change Point Model in HRS

	Total Financial Wealth (1)	Checking and Savings (2)	Investment Wealth (3)	IRA Wealth (4)
Characteristic	**Wealth [B (SE)]**	**Wealth [B (SE)]**	**Wealth [B (SE)]**	**Wealth [B (SE)]**
Cognitive Decline Period				
Pre Decline	—	—	—	—
Post Decline	-2.33 (0.581) ***	-0.215 (0.092) *	-1.28 (0.341) ***	-0.895 (0.298) **
Gender				
Male	—	—	—	—
Female	-1.42 (0.523) **	0.067 (0.078)	-0.420 (0.299)	-1.06 (0.272) ***
Race				
1.White/Caucasian	—	—	—	—
2.Black/African American	-11.7 (0.520) ***	-1.31 (0.080) ***	-4.40 (0.259) ***	-5.14 (0.266) ***
3.Other	-4.27 (0.863) ***	-0.395 (0.128) **	-0.941 (0.455) *	-2.85 (0.425) ***
Age Category				
51-60	—	—	—	—
61-70	8.92 (0.379) ***	1.00 (0.061) ***	3.55 (0.219) ***	3.72 (0.204) ***
71-80	14.8 (0.582) ***	2.07 (0.094) ***	7.90 (0.359) ***	3.98 (0.295) ***
81-90	19.4 (0.899) ***	3.42 (0.162) ***	13.2 (0.664) ***	1.78 (0.386) ***
91+	21.7 (2.38) ***	3.89 (0.614) ***	17.9 (2.27) ***	-1.37 (0.725)
Upper Secondary Education or Higher	7.43 (0.585) ***	0.395 (0.089) ***	3.06 (0.341) ***	3.34 (0.300) ***
Poor Health	-3.62 (0.429) ***	-0.339 (0.069) ***	-0.914 (0.259) ***	-2.15 (0.198) ***
Pre-Decline Income Quartile				
q1	—	—	—	—
q2	5.24 (0.466) ***	1.31 (0.082) ***	2.34 (0.245) ***	1.47 (0.268) ***
q3	14.6 (0.684) ***	2.35 (0.102) ***	7.01 (0.403) ***	4.58 (0.346) ***
q4	31.8 (0.920) ***	4.22 (0.131) ***	13.4(0.532) ***	11.4 (0.467) ***
No. Obs.	68,617	68,617	68,617	68,617

*p<0.05; **p<0.01; ***p<0.001

Note: This table shows the results of an OLS regressions on Wealth variables in HRS respondents. In Column 1, the dependent variable is total financial wealth (net non-housing financial wealth + IRA). In Column 2, the dependent variable is wealth from checking and savings accounts. In Column 3, the dependent variable is wealth from liquid investments (stocks, bonds,CDs, mutual funds). In Column 4, the dependent variable is wealth from IRAs. *p<.05; **p<.01; ***p<.001

Source: Authors' calculations

Table 3: Wealth After Cognitive Decline Measured using Total Word Recall Change Point Model in ELSA

Characteristic	Total Financial Wealth (1) **Wealth [B (SE)]**	Checking and Savings (2) **Wealth [B (SE)]**	Investment Wealth (3) **Wealth [B (SE)]**	ISA Wealth (4) **Wealth [B (SE)]**
Cognitive Decline Period				
Pre Decline	—	—	—	—
Post Decline	-0.929 (0.427) *	-0.149 (0.119)	-0.308 (0.139) *	-0.224 (0.118)
Gender				
Male	—	—	—	—
Female	0.030 (0.293)	-0.023 (0.081)	-0.082 (0.101)	0.002 (0.082)
Age Category				
51_60	—	—	—	—
61-70	4.68 (0.303) ***	0.747 (0.093) ***	1.13 (0.110) ***	1.25 (0.083) ***
71-80	5.92 (0.445) ***	0.826 (0.125) ***	1.51 (0.147) ***	1.49 (0.125) ***
81-90	6.02 (0.623) ***	1.26 (0.221) ***	1.54 (0.201) ***	1.30 (0.186) ***
Upper Secondary Education or Higher	3.43 (0.396) ***	0.645 (0.108) ***	0.870 (0.142) ***	0.853 (0.110) ***
Poor Health	-2.28 (0.288) ***	-0.495(0.087) ***	-0.465 (0.098) ***	-0.582 (0.081) ***
Pre-Decline Income Quartile				
q1	—	—	—	—
q2	3.15 (0.335) ***	0.584 (0.104) ***	0.642 (0.109) ***	0.835 (0.097) ***
q3	6.97 (0.474) ***	1.32 (0.140) ***	1.52 (0.150) ***	1.68 (0.128) ***
q4	14.1 (0.636) ***	2.97 (0.178) ***	3.73 (0.226) ***	3.01 (0.172) ***
No. Obs.	25,185	25,185	25,185	25,185

*p<0.05; **p<0.01; ***p<0.001

Note: This table shows the results of an OLS regressions on Wealth variables in ELSA respondents. In Column 1, the dependent variable is total financial wealth (net non-housing financial wealth + ISA). In Column 2, the dependent variable is wealth from checking and savings accounts. In Column 3, the dependent variable is wealth from liquid investments (stocks, bonds, CDs, mutual funds). In Column 4, the dependent variable is wealth from ISAs. *p<.05; **p<.01; ***p<.001

Source: Authors' calculations

Table 4: Wealth After Cognitive Decline Measured using Total Word Recall Change Point Model in SHARE

Characteristic	Total Financial Wealth (1) **Wealth [B (SE)]**	Checking and Savings (2) **Wealth [B (SE)]**	Investment Wealth (3) **Wealth [B (SE)]**	IRA Wealth (4) **Wealth [B (SE)]**	Total Financial Wealth with Interaction Term (5) **Wealth [B (SE)]**
Cognitive Decline Period					
Pre Decline	—	—	—	—	—
After Decline	-0.288 (0.133) *	-0.072 (0.046)	0.034 (0.079)	-0.256 (0.077) ***	-0.296 (0.087) ***
Gender					
Female	—	—	—	—	—
Male	0.637 (0.094) ***	0.052 (0.032)	0.270 (0.051) ***	0.351 (0.054) ***	0.635 (0.094) ***
Age Category					
51_60	—	—	—	—	—
61-70	0.538 (0.105) ***	0.463 (0.036) ***	0.619 (0.052) ***	-0.729 (0.067) ***	0.530 (0.106) ***
71-80	0.155 (0.128)	0.540 (0.046) ***	0.830 (0.070) ***	-1.49 (0.075) ***	0.178 (0.130)
81-90	0.137 (0.189)	0.734 (0.081) ***	0.759 (0.118) ***	-1.68 (0.102) ***	0.239 (0.190)
Upper Secondary Education or Higher	1.25 (0.106) ***	0.253 (0.042) ***	0.558 (0.059) ***	0.450 (0.054) ***	1.14 (0.093) ***
Poor Health	-0.827 (0.079) ***	-0.249 (0.030) ***	-0.347 (0.042) ***	-0.204 (0.046) ***	-0.878 (0.078) ***
Pre-Decline Income Quartile					
q1	—	—	—	—	—
q2	0.168 (0.070) *	0.190 (0.025) ***	0.040 (0.031)	-0.043 (0.043)	0.378 (0.068) ***
q3	1.73 (0.137) ***	0.676 (0.047) ***	0.751 (0.069) ***	0.345 (0.078) ***	2.23 (0.128) ***
q4	6.23 (0.211) ***	1.51 (0.073) ***	2.17 (0.112) ***	2.66 (0.120) ***	6.91 (0.198) ***
Country Financial Complexity Tertile					
t1					—
t2					0.933 (0.095) ***
t3					5.21 (0.177) ***
Cognitive Decline Period * Country Financial Complexity Tertile					
After Decline * t2					-0.188 (0.208)
After Decline * t3					0.486 (0.395)
No. Obs.	54,421	54,421	54,421	54,421	54,421

*p<0.05; **p<0.01; ***p<0.001

Note: This table shows the results of an OLS regressions on Wealth variables in SHARE respondents. In Column 1, the dependent variable is total financial wealth (net non-housing financial wealth + IRA). In Column 2, the dependent variable is wealth from checking and savings accounts. In Column 3, the dependent variable is wealth from liquid investments (stocks, bonds, CDs, mutual funds). In Column 4, the dependent variable is wealth from IRAs. Column 5 adds an interaction term to predict total financial wealth *p<.05; **p<.01; ***p<.001

Source: Author's calculations