



University of Pennsylvania
ScholarlyCommons

Wharton Pension Research Council Working
Papers

Wharton Pension Research Council

2016

Introduction: Financial Decision Making and Retirement Security in an Aging World

P. Brett Hammond

Olivia S. Mitchell

Steve Utkus

Follow this and additional works at: https://repository.upenn.edu/prc_papers



Part of the [Economics Commons](#)

The published version of this Working Paper may be found in the 2017 publication: *Financial Decision Making and Retirement Security in an Aging World*.

This paper is posted at ScholarlyCommons. https://repository.upenn.edu/prc_papers/642
For more information, please contact repository@pobox.upenn.edu.

Introduction: Financial Decision Making and Retirement Security in an Aging World

Disciplines

Economics

Comments

The published version of this Working Paper may be found in the 2017 publication: [*Financial Decision Making and Retirement Security in an Aging World*](#).

Chapter 1

Introduction: Financial Decision Making and Retirement Security in an Aging World

Brett Hammond, Olivia S. Mitchell, and Steve Utkus

The World Health Organization reports that by 2050, two billion people will be age 60 and older, up from 605 million in 2000—and the proportion age 60 and older will jump from 11 percent to 22 percent (WHO 2014). These older generations are healthier, better educated, and wealthier than their predecessors in most countries. Nevertheless, while people are living longer, one point of vulnerability remains cognition and cognitive ability, particularly at advanced ages. In fact, it has been estimated that today half of all adults in their 80s either have dementia or some milder form of cognitive impairment without dementia (Bernard 2015). Meanwhile, as we grow older, we remain responsible for managing our own wealth, health, and insurance arrangements, sometimes successfully, and other times to our detriment. The goal of this volume is to review emerging research on the changing capacity of aging households to manage their own finances, to assess the implications for financial decision making and behavior later in life, and to draw out options for addressing key concerns.

With the rise of individual responsibility for lifetime financial security, a wide range of institutions—regulators and public agencies, employers, financial institutions, and advisors—is developing ways to educate, guide, and advise savers as they navigate key decisions about their financial futures. In the course of creating informative new programs and exhorting individuals to take notice, these efforts have often relied on individuals' ability and willingness to listen and take appropriate action, often with regard to unfamiliar decisions for which the consequences are seemingly uncertain and in many cases not immediate. Yet evidence from the accumulation phase of retirement illustrates the limits of education and advice programs to change behavior. Younger savers tend to be subject to inertia, and many make seemingly poor choices without more explicit guidance. The response has been the growth of automatic savings and investment programs, whether mandatory or automatic-enrollment based, designed to simplify or streamline complex financial choices.

2 Financial Decision Making and Retirement Security

To date, however, much less attention has been paid to the questions pertaining to retirees—and those approaching retirement—and their capacity to make effective financial decisions. This is the case despite the fact that older persons confront additional and perhaps more daunting challenges than their pre-retirement counterparts. As they approach and enter retirement, households must aggregate a lifetime of savings and benefit programs, both public and private, while developing a practical overview of their resources. They must also navigate a number of new risks, particularly longevity risk, as well as the costs of health care and long-term care. Meanwhile, government pensions, workplace retirement programs, and financial advisors are only recently coming to grips with these complex issues and the help that older individuals will need.

It is also becoming clear that regulators and financial service providers will need to account for the changing cognitive capacity of older individuals. Older decision makers benefit from accumulated experience and better emotional regulation, as compared to younger individuals. Yet some people do struggle with making complex financial choices due to a general decline in cognitive skill. Yet others are subject to severe impairment, due to the rise of dementia at older ages. So even if the content of financial advice is good and the delivery compelling, some older persons will find it difficult to arrive at appropriate decisions and stick to them. Additionally, although there is some question whether older individuals are more prone to act on poor advice or accept fraudulent offers, it is often true that older individuals hold more wealth and hence are potentially at greater risk.

In this introductory chapter, we provide an overview of the problem and tie together the findings and implications raised in the subsequent chapters authored by experts in this field. We conclude that a key policy issue is how all entities involved in serving older households—regulators, employers, pension providers, financial institutions, and advisors—will cope under these circumstances. This is critical to the protection of retiree financial security in an aging world.

Financial Decision Making at Older Ages

A growing body of evidence on household financial literacy has shown that many individuals of all ages lack certain critical financial skills, and that older individuals may be particularly deficient (Lusardi and Mitchell 2014; Lusardi et al. 2013). There is no single reason for this falloff in performance, but it may have to do with the nature of the decisions themselves, the skills of the individuals making them, and the tools and assistance available to help.

Introduction 3

No matter how one might try to simplify, it will always be the case that decisions involving major purchases (such as a car or home), education, job and career, and health care are some of the most complex and multifaceted that any households confront. Assuring lifetime financial security can be on par with, or in some cases more complex than, decisions about education, work, and health. In the case of retirement security, this involves deciding how much to save (versus spend on other financial demands), where to invest among a variety of choices, how often to monitor and adjust investments, when and how much to spend from an accumulated nest egg, and how to make the money last as long as one lives. These decisions must be made repeatedly, over long horizons, and amid significant risk and uncertainty about future income, investment returns, spending needs, and life expectancy.

Only some of these risks in the retirement phase are readily mitigated. Government-run pensions like US Social Security do pay inflation-adjusted, lifetime benefits for eligible retired workers and their spouses. But in the US and other countries, these programs can provide only partial income replacement, and many face solvency challenges in view of population aging. Additionally, benefit claiming decisions can be complex. For instance, several recent authors have provided analyses explaining how people should think about Social Security retirement benefit options (e.g., Shoven and Slavov 2014; Kotlikoff et al. 2015; Maurer et al. forthcoming). Defined benefit retirement plans also traditionally provided retirement income based on years of work and pre-retirement income, but few younger workers will have access to these plans in the future, outside the public sector. Moreover, some pension plans face an uncertain future due to poor funding, while even in well-funded plans, workers face a loss of future pension accruals in the event of a job change or job termination, especially later in life. Further, in the US and other countries, defined contribution plans are increasingly the norm, and these rarely provide retirees with guaranteed income streams.

In sum, older persons now face increased responsibility for later life risk management and decision making responsibilities. They will need to navigate these choices on their own, or seek help from government agencies, workplace retirement programs, and financial advisors, in order to make better choices. In the US defined contribution retirement system, for example, government policymakers and employers have started enhancing decision making assistance in a number of ways. Regulators are introducing new policies to encourage lifetime income programs and to govern the quality of advice for rollovers from workplace programs to personal pension accounts. Meanwhile, plan sponsors and providers are creating new programs of information about retirement options and risks, and introducing systems of advice for managing investment portfolios, claiming Social Security benefits, or drawing down retirement savings.

4 Financial Decision Making and Retirement Security

Even with these elements, however, the retirement system remains complex and can generate dysfunctional decision making. One reason is the variety of behavioral beliefs and preferences associated with decisions that make it hard for people to achieve long-term financial security. For instance, over-optimism, over-confidence, extrapolation bias, and ‘gambler’s fallacy’ all affect people’s perceived (versus ‘actual’) probability of an event such as achieving an investment return or adequate retirement income (e.g., Shefrin 2010).¹ In addition, behavioral preferences such as prospect theory along with regret and self-control issues, can affect not just the perceived probability of an event, but also the ‘utility’ a person receives from that event.² In other words, people tend to overweight the *probability* of extreme (small probability) events *and* to over/underweight the *value* of some events versus others (Kahneman and Tversky 1979). In particular, future orientation (‘impatience’) can vary significantly among people, affecting the value they place on forgoing consumption now to fund future spending (Burks et al. 2009; Chabris et al. 2008; Schreiber and Weber 2016). Other perception errors, such as how personal financial choices are framed (Tversky and Kahneman 1981) and accounted for (Thaler 1999), can exacerbate these effects.

To date, empirical studies of behavioral biases in decision making have mainly focused on younger people and the choices they confront. While older people encounter many of the same budgeting and investing challenges as their younger colleagues, they can also face additional difficulties along several dimensions. Younger people have more time to ‘get it right’: that is, due to having a longer remaining work life, they have more potential for forgoing current consumption in order to fund future spending. By contrast, for retirees the scope of new action is smaller, especially given that their human capital (the present value of their future work earnings) is declining rapidly. In short, young people have human capital to draw on and more time to make midcourse corrections (e.g., increase their savings rates, reallocate investments, etc.). Older individuals have fewer degrees of freedom, and are delimited by previous irreversible decisions they have made on wealth, health, education, work, and other factors.

Older persons also confront a series of consequential, often irreversible decisions that will affect the remainder of their lives. Examples include when to claim Social Security and pension benefits, how much to invest in health and health insurance, how to draw down savings, whether and how much to invest in guaranteed income products, whether to sell one’s home and move, and how to navigate the transition to old-age care. And the most difficult element of the decision is that they must do this with uncertain knowledge of their health prospects and longevity. Many of these factors are typically not within younger persons’ calculus.

Introduction 5

Additional Considerations in the Older Population

Three other issues are especially important for older people: capabilities, context, and tools. The first has to do with older persons' capabilities to manage complex financial decisions. We know that younger people are subject to behavioral challenges when it comes to financial decision making. What is of interest in this volume is to understand whether older people face similar or different challenges. For example, it is well known that older people are better at regulating their emotional state than younger individuals. Yet they also tend to suffer progressive cognitive declines that make it more difficult to process new information with age (Hartshorne and Germine 2015), even for those without severe maladies such as Alzheimer's, dementia, and Parkinson's disease. At the same time, recent research shows that few elderly experience a commensurate decline in confidence in their own financial abilities (Gamble et al. 2015; Finke et al. 2016).

Beyond information-processing, the character of decision making can also change. For example, many individuals have personal discount rates that are above market discount rates, suggesting impulsivity. In the cross-section, older people have personal discount rates higher than younger people and these rise significantly after age 70 (Huffman et al. 2016). Impatience at these ages may be associated with lower net wealth, poorer health, and less adequate end-of-life planning. Other relevant changes in capabilities among older people include increased anxiety, reduced mobility, vision and hearing loss, depression, and effects of prescription regimens, all of which can affect behavior, even among those with otherwise 'normal' cognitive functioning (Lachs and Han 2015).

Such cognitive changes may be at least partially offset by experiential judgment based on accumulated knowledge of financial matters (Li et al. 2016). This is evident in research showing that financial 'mistakes' follow a U-shaped pattern, with middle-age people performing better than those younger or older (Agarwal et al. 2009).

It is worth noting, of course, that people do not age mentally and physically at the same rate. Differences among older people can exceed the differences between older and younger people (Huffman et al. 2016). Consequently, while efforts to assist older people might start by identifying those with more reduced financial abilities, little attention has been given to systematic approaches for doing so (an exception is Moyer et al. 2013).

A second set of factors that can affect financial decision making at older ages is contextual and social. Not only do the elderly face numerous and complex challenges, but older people often have more money than younger people and experience more social isolation. This is a troubling combination since it can make them prone to receive as well as accept advances from people offering 'assistance' on financial matters (Lachs and Han 2015).

6 Financial Decision Making and Retirement Security

A consequence is that older people can be both more exposed to and less able to spot ruses or scams.

The third set of factors affecting financial decisions at older ages has to do with the tools, content, and default options available to older people as they age. Customized advice, sophisticated tools, and planning options are available to those with significant wealth, but for the less affluent, the mismatch between financial planning, decision needs, and the resources to support them may be more meaningful. For example, many forms of automated or ‘robo’ advice, versions of which are proliferating, have focused on pre-retirement investing outside of retirement plans. Automated income services for defined contribution plans are a relatively new addition to the landscape. Moreover, though some investment service providers have spent large sums on tools and programs for retirement planning, take-up rates have been higher for younger individuals than for older ones (Cornehlsen and Schwarz 2015).

More generally, older people are urged to seek financial advice; reduce swings in the value of accumulated wealth; draw a modest proportion of that wealth each year for spending needs; and reduce spending if wealth is inadequate or falls. They might also be offered long-term care insurance, annuities for guaranteed income, or reverse home mortgages, but use of these risk mitigation products is quite low. Improving outcomes with respect to these choices is a challenging task for research and policy discussions around older people’s financial management, taking into account decision complexity, declining capabilities, changes in context, and resource limits.

Recognizing special concerns associated with financial security for older people, both academic and public discussion has begun to examine the underlying issues and options for addressing them. A wide range of options for financial planning and decisions for older people include increased financial literacy education (Lusardi et al. 2015) that continues through life (Joint Academy Initiative on Aging 2010); nudges to encourage positive action, as well as a focus on decision choice architecture (Thaler and Sunstein 2008); required financial drivers’ licenses; required use of advance directives; changes in fiduciary responsibilities and compliance (CFPB 2016); investment safe harbors (Agarwal et al. 2009; Antolin et al. 2008); and increased *ex ante* regulatory oversight for financial products and advice.

Nevertheless, if the financial decision making and management challenges facing older people are complex and uncertain, the advice and tools available to them have gaps, and the ability of some older people to process information and make decisions is a challenge, what are we to make of all of this?

In what follows, we provide an overview of research from three lines of inquiry pertinent to our topic: the aging brain and financial decision making; the use of advice and other options for setting and achieving financial goals; and the policy landscape for improving financial outcomes for older

Introduction 7

people. Our effort is to assess the special characteristics and needs of older people in the financial context, and to review new policy and program developments for the elderly as they navigate the financial aspects of retirement. The chapters that follow take the discussion further, focusing on age and decision making; financial goals, advice, and options; and the policy landscape.

The Aging Brain and Financial Decision Making

Accurately assessing decision making competence among older people is important for at least two reasons. First, in the large, it can lay the groundwork for understanding the older population's needs, and for building policies and programs that reflect any special needs. Second, at the micro level, accurate assessments of capabilities can help us adjust policies and programs and actions to variations among individuals.

Taken together, the chapters by Wändi Bruine de Bruin, Keith Jacks Gamble, and Raquel Fonseca, Arie Kapteyn, and Gema Zamarro (this volume) look at advances in measuring decision making competence for older people as well as sorting through the range of available types of interventions available. Overall, they find that cognitive performance is nonlinear, varying considerably across individuals of the same age, and can be difficult to track. One explanation is that performance is informed by both 'fluid intelligence' (roughly, the ability to solve abstract problems), which peaks about age 20, as well as 'crystallized intelligence' (wisdom and experience), which continues to grow and then level off at about age 65. Cognitive performance as a whole tends to peak in about the mid-50s, an ideal time to make specific retirement plans.

Fortunately, it is possible to assess practical abilities using hypothetical or proxy task tests. Research using such tests documents declining cognitive performance with older age and shows that older people are more likely to misapply financial decision rules and not apply expected value calculations. While older people may make more financial mistakes, they can be less stubborn than younger people in sticking with bad decisions. They also respond better to positive motivators and reinforcement and tend to be more optimistic.

Using these findings, research points to interventions that may be more likely to work and others to avoid. Financial education and experience that starts early in life and continues throughout may bear fruit in improved abilities and outcomes later in life. Among older people, continued cognitive training may help offset a portion of inevitable decline, but it can also be taxing so best limited to shorter periods and smaller choice sets. In addition, personalizing these exercises is likely to be more fruitful than abstract

8 Financial Decision Making and Retirement Security

maxims, and training can fruitfully focus on imagining how to set and achieve financial goals and seek advice. Nudges, rather than requirements, may therefore be productive.

Financial Goals, Advice, and Product Options

The volume next turns to work showing that it is especially important to understand older persons' priorities as well as the tools and products available to them for setting goals and achieving them. According to Kolluri and Hutchins (this volume), today's older Americans are thinking more broadly than their predecessors about retirement in light of seven priorities: health, home, family, work, giving, finances, and leisure. With a multifaceted set of priorities, it is no surprise that the options available to many people are proliferating as well as concerns about how to assess, choose between, and manage them.

Of special interest is the question of when financial advice will be most valuable and for whom. Kim, Maurer, and Mitchell's chapter (this volume) points out that most people exhibit considerable inertia in managing their financial assets, partly because it costs them time and money to manage their own portfolios. The authors simulate the wealth effects of self-management, investing in a target-date fund, or using a financial advisor, and they show substantial benefits of turning to competent financial advice early in one's working years and continuing the relationship. While well-timed advice may be valuable, few people seek it. In their chapter, Clark, Fiaschetti, and Tufano study advice-seekers in the Australian pension system and they conclude that only a small proportion of people contact their providers. Of those, younger people tend to ask about administrative matters. Older persons are somewhat more likely to ask about retirement matters, but usually well after the age when there is much they can do to affect wealth outcomes. Clark and Cowell's chapter (this volume) considers the options available for public defined benefit (DB) participants at retirement. They conclude that public DB plans, rather than eliminating annuities with their automated and guaranteed features, would do better to consider including deferred annuities and options that would integrate with Social Security.

Policy Responses for the Older Population

Part III of this volume takes into account the findings on cognitive challenges and the complex nature of financial planning for retirement by focusing on options for improving protections for older people. A conclusion that can be drawn from this work is that people in general, and older ones in

Introduction 9

particular, may benefit from advice—but they may not be inclined to seek it or to be particularly good at managing complicated investments and income streams themselves. Consequently, packaged and/or automatic defaults for investments and income in retirement may deserve a hard look.

Chapters by DeLiema and Deevy, and Kieffer and Mottola (this volume) examine the dynamics of fraud, exploitation, and poor decision making as well as programs and policies used in the private sector and by public agencies to protect older people. Fraud alone directed at older Americans is estimated to cost around \$50 billion per year, with additional ancillary effects. And as we have noted, older people are more likely to have wealth than younger people, and to experience financial ‘events’ (retirement, house sale, health expenditure), so they are more likely to be targeted for exploitation and fraud. With technology, new cohorts of older Americans are less likely to have a personal relationship with a financial institution, something that is not reducing but certainly is altering the challenges in this area.

Firms, trade organizations, financial regulators, and several US agencies have stepped up fraud and exploitation awareness as well as other programs, including hotlines, call centers, and marketing campaigns. In addition, the new US Department of Labor regulation expanding the fiduciary duty of brokers to individual investors has altered the relationship between financial institutions and older people with qualified investments. Moreover, several other state and federal regulations are being considered to shield firms who work to protect clients from financial exploitation.

Beyond current research on older people, behavior, and programs, each of the chapters in this section suggest areas where additional knowledge is needed. For instance, much of the current research is cross-sectional rather than longitudinal, making it difficult to tease out the distinct effects of aging, the passage of time, and one’s birth cohort on the results. Following people through time will be likely to improve understanding of changes in decision making and the effects of interventions on behavior. In addition, within-group variations in competence and capabilities may be significant, and researchers still face the challenge of understanding just how policies and programs to assist older people need to be adjusted for these variations.

Conclusions

The growth in aged households continues around the world, both in absolute numbers and as a proportion of the total population. The collected wisdom of contributors to this volume has helped us understand what programs and interventions would likely improve financial outcomes for older people. Nevertheless they also point out that much remains to be

10 Financial Decision Making and Retirement Security

done. Additional features and programs such as automatic defaults and safe harbors, new advice programs, a ‘financial driver’s license,’ wider use of advanced directives, and targeted training programs, may prove effective given further testing. It is also important to explore the costs and benefits of additional customization in light of older persons’ different capabilities and attitudes. These may be knotty problems to solve, but their importance and the potential consequences of inaction or misdirected action are likely to be substantial.

Notes

1. These types of beliefs can shift the probability density function of an expected event by a change in mean, variance, or shape (linear to nonlinear). An exception is ‘ambiguity aversion’ which does not necessarily shift the perceived probability function.
2. Preference biases can shift the shape of the utility function as well as the event probability function. The classic shift is, in prospect theory, a kinked utility function where people are more fearful of bad outcomes than they are pleased about positive outcomes.

References

- Agarwal, S., J. C. Driscoll, X. Gabaix, and D. Laibson (2009). ‘The Age of Reason: Financial Decisions over the Life Cycle and Implications for Regulation’. In D. H. Romer and J. Wolfers (eds.), *Brookings Papers on Economic Activity*. Washington, DC: Brookings Institution, pp. 51–111.
- Antolin, P., C. Pugh, and F. Stewart (2008). ‘Forms of Benefit Payment at Retirement’. OECD Working Papers on Insurance and Private Pensions No. 26. Paris: OECD Publishing.
- Bernard, T. S. (2015). ‘As Cognition Slips, Financial Skills Are Often the First to Go’. *New York Times*, April 24.
- Burks, S. V., J. P. Carpenter, L. Goette, and A. Rustichini (2009). ‘Cognitive Skills Affect Economic Preferences, Strategic Behavior, and Job Attachment’. *Proceedings of the National Academy of Sciences* 106(19): 7745–50.
- Chabris, C. F., D. Laibson, C. L. Morris, J. P. Schuldt, and D. Taubinsky (2008). ‘Individual Laboratory-Measured Discount Rates Predict Field Behavior’. *Journal of Risk and Uncertainty* 37(2–3): 237–69.
- Consumer Financial Protection Bureau (CFPB) (2016). ‘Recommendations and Report for Financial Institutions on Preventing and Responding to Elder Financial Exploitation’. Washington, DC: CFPB. <http://files.consumerfinance.gov/f/201603_cfpb_recommendations-and-report-for-financial-institutions-on-preventing-and-responding-to-elder-financial-exploitation.pdf>.

Introduction 11

- Cornehlens, J. and T. Schwarz (2015). 'Rise of Robo-Advisors Brings Challenges, Opportunities for Consumers'. New York: ABC News. <<http://abcnews.go.com/Business/rise- robo- advisors- brings- challenges- opportunities- consumers/ story? id= 33692949>>.
- Finke, M. S., J. S. Howe, and S. J. Huston (2016). 'Old Age and the Decline in Financial Literacy'. *Management Science* 60(8): 1861–83.
- Gamble, K. J., P. A. Boyle, L. Yu, and D. A. Bennett (2015). 'Aging and Financial Decision Making'. *Management Science* 61(11): 2603–10.
- Hartshorne, J. K. and L. T. Germine (2015). 'When Does Cognitive Functioning Peak? The Asynchronous Rise and Fall of Different Cognitive Abilities across the Life Span'. *Psychological Science* 26(4): 433–43.
- Huffman, D., R. Maurer, and O. S. Mitchell (2016). 'Time Discounting and Economic Decision Making Among the Elderly'. NBER Working Paper No. 22438. Cambridge, MA: National Bureau of Economic Research.
- Joint Academy Initiative on Aging (2010). 'More Years, More Life'. Hamburg: Academy of Sciences Leopoldina and German Academy of Science and Engineering. <https://www.leopoldina.org/uploads/tx_leopublication/2009_NatEmpf_Altern_in_D-EN.pdf>.
- Kahneman, D. and A. Tversky (1979). 'Prospect Theory: An Analysis of Decision Making under Risk'. *Econometrica* 47(2): 263–91.
- Kotlikoff, L. J., P. Moeller, and P. Solman (2015). *Get What's Yours: The Secrets to Maxing Out Your Social Security*. New York: Simon & Schuster.
- Lachs, M. S. and S. D. Han (2015). 'Age-Associated Financial Vulnerability: An Emerging Public Health Issue'. *Annals of Internal Medicine* 163(11): 877–8.
- Li, Y., J. Gao, A. Zeynep Enkavi, L. Zaval, E. U. Weber, and E. J. Johnson (2016). 'Sound Credit Scores and Financial Decisions Despite Cognitive Aging'. *Proceedings of the National Academy of Sciences* 21(1): 65–9.
- Lusardi, A. and O. S. Mitchell (2014). 'The Economic Importance of Financial Literacy: Theory and Evidence'. *Journal of Economic Literature* 52(1): 5–44.
- Lusardi, A., O. S. Mitchell, and V. Curto (2013). 'Financial Literacy and Financial Sophistication among Older Americans'. *Journal of Pension Economics and Finance* 13(4): 347–66.
- Lusardi, A., A. S. Samek, A. Kapteyn, L. Glinert, A. Hung, and A. Heinberg (2015). 'Visual Tools and Narratives: New Ways to Improve Financial Literacy'. NBER Working Paper 20229. Cambridge, MA: National Bureau of Economic Research.
- Maurer, R., O. S. Mitchell, R. Rogalla, and T. Schimetschek (Forthcoming). 'Will They Take the Money and Work? An Empirical Analysis of People's Willingness to Delay Claiming Social Security Benefits for a Lump Sum'. *Journal of Risk and Insurance*.
- Moye, J., D. C. Marson, and B. Edelstein (2013). 'Assessment of Capacity in an Aging Society'. *American Psychologist* 68(3):158–71.
- Schreiber, P. and M. Weber (2016). 'The Influence of Time Preferences on Retirement Timing'. University of Mannheim Discussion Paper. Mannheim: University of Mannheim.
- Shefrin, Hersh (2010). 'Behavioralizing Finance'. *Foundations and Trends in Finance* 4(10): 1–184.

12 Financial Decision Making and Retirement Security

- Shoven, J. B. and S. N. Slavov. (2014). 'Does It Pay to Delay Social Security?' *Journal of Pension Economics and Finance* 13(2): 121–44.
- Thaler, R. H. (1999). 'Mental Accounting Matters'. *Journal of Behavioral Decision Making* 12(3): 183–206.
- Thaler, R. H. and C. R. Sunstein (2008). *Nudge: Improving Decisions about Health, Wealth, and Happiness* New Haven, CT: Yale University Press.
- Tversky, A. and D. Kahneman (1981). 'The Framing of Decisions and the Psychology of Choice Science'. *Science* 211(4481): 453–8.
- World Health Organization (WHO) (2014). *Facts about Aging*. Geneva: WHO. <<http://www.who.int/ageing/about/facts/en/>>.