



JÖNKÖPING UNIVERSITY

*Jönköping International  
Business School*

Doctoral Thesis

# **Pensions, Retirement Behaviour and Financial Fraud Victimisation**

Amedeus Malisa





JÖNKÖPING UNIVERSITY

*Jönköping International  
Business School*

Doctoral Thesis

# **Pensions, Retirement Behaviour and Financial Fraud Victimisation**

Amedeus Malisa

Doctoral Thesis in Economics

Pensions, Retirement Behaviour and Financial Fraud Victimization  
JIBS Dissertation Series No. 148

© 2022 Amedeus Malisa and Jönköping International Business School

Published by  
Jönköping International Business School, Jönköping University  
P.O. Box 1026  
SE-551 11 Jönköping  
Tel. +46 36 10 10 00  
[www.ju.se](http://www.ju.se)

Printed by Stema Specialtryck AB, 2022

ISSN 1403-0470  
ISBN 978-91-7914-011-3



*To the memory of my beloved mother, Adelmars Shayo.  
Your legacy lives on.*



# Acknowledgment

This thesis would not have been possible if not for so many individuals who supported me and helped me live my PhD dreams. As the saying goes, *“He who travels alone travels fastest, but you go farther in the company of friends.”*

First, I am deeply indebted to my supervisors—and co-authors, Paul Nystedt and Johannes Hagen. I am happy that I had the opportunity to experience this intense and challenging journey under your guidance. Paul, thank you for your constant and tireless advice and guidance. Your calmness, intelligence and attention to detail are inspiring. You are an outstanding mentor who I keep learning every day; I am grateful to be your *“young Padawan”*. Johannes, thank you for introducing me to pensions and retirement research, which became the source of inspiration for my thesis. I appreciate your tireless efforts in pushing me to try new ideas and the insightful feedback you have contributed to my research. I have learned a lot from your impressive research and writing skills.

Thank you both for always being there whenever I needed any advice, not just in my PhD work but also in life. You all have been the best PhD advisors I could have. For this, I will forever be grateful!!

Second, this thesis benefited from valuable comments at various conferences and workshops in Sweden and abroad. I gratefully acknowledge the assistance of Hazel Bateman, Geoffrey J D Hewings, Emil Persson, Spencer Bastani, Charlotta Mellander, Anna Nordén, Marcel Garz, Matthias Ritter, Sofia Wixe, Jorgo Goossens, Emma Lappi, Anton Hasselgren and Heike Vethaak. Thank you for your invaluable contribution and excellent comments. I would like to thank my final discussant, Anders Andersson, for practical and valuable suggestions on my research that have largely improved my thesis. I also owe many thanks to seminar participants in the Friday seminars, participants in the Public Economics Workshop in Uppsala and International Pension Workshops organised by Netspar. I would like to extend my deepest gratitude for academic support and ideas from senior faculty members in Economics, Finance and Statistics Department at JIBS. In addition to the mentioned above Andreas Stephan, Johan Klaesson, Almas Heshmati, Fredrick Hansen, Agostino Manduchi, Zangin Zeebari, Kristofer Månsson, Pär Sjölander, Lina Bjerke, Andrea Schneider, Mikaela Backman, and Benjamin Larin who have given me valuable comments and took the time to provide feedback on my work, especially during my feedback sessions (“tortures”) and Friday seminars. Thank you, Scott Hacker, for being a wonderful coach early in my PhD, a great teacher, and a friendly office neighbour.

Third, I would also like to acknowledge the former and current PhD students at JIBS who made the long PhD journey memorable and endurable. Many thanks to Emma Lappi, Orsa Kekezi, Helena Nilsson, Pingjing and Toni Duras who have always

been very friendly and supportive to me. I would like to thank Jonna Rickardsson and Alexander Petreski, with whom I have shared the highs and lows of my PhD life. Miquel Correa, Jiyoung Kim, Alireza Khoshghadam, Sindi Sheri, and Prince Chako, you ensured that my work was punctuated with a refreshing lunch fika or short walks. To Amare Tareke, Akram Mahmoudi, Arash Habibi, Erwan Dujancourt, Talha Omer, Qassim Muhammad, Vincent Byusa, who, through daily interactions, made my PhD life so enjoyable. Even though my PhD journey was sometimes dreary, you made it worthwhile. Thank you for all the network forged. Good luck to all who are yet to defend your theses.

Fourth, I am grateful to Monica Bartels, Sofie Grahnat, Rose-Marie Wickström, Katarina Blåman, Susanne Hansson, Marie Levander and Maja Johansson for your excellent coordination and for providing me with quick and excellent administrative support.

Fifth, further gratitude goes to my friends, close and far away, who contributed to my mental well-being and for being supportive during my PhD studies. Special thanks to Violeth Nyoni, Frank Chuwa, Regis Mmbando, Martha Kibru, Patrick Mtei, Evance Tesha, Mr & Mrs Jackson Mrema, Mr & Mrs David Ndirangu, Marvin Ngoma, Grace Sekwao, Domina Kiunsi, Anna Bilinyi, Pendo Ngatuni and Esther Matemba, Irene Ngoti, Daniel Mzava, Abdalah Dizzy and Avril Oketch. I will always have a special bond with you all. Asanteni sana!!

Sixth, I am deeply grateful for the support and love of my family. I thank my dad and siblings, Getrude, Joseph, Sophia, Gilbert, and Harrison. I am thankful for being there for me, your unwavering love, support, and everything you have helped me achieve in my studies. Finally, and not least, I thank God for his mercies and blessings upon my life and family. Completing the PhD is just one of many blessings I am grateful for.

Jönköping, May, 2022  
Amedeus Malisa

# Abstract

This thesis consists of four articles that explore pension investments and retirement behaviour.

The first article investigates how pension communication affects the trading behaviour among pension savers. By using geographical variation in the timing of the distribution of information letters sent from the Swedish Pension Agency to savers, I show that pension information statistically significantly affects investors' trading activity. Still, the letters' economic relevance is limited due to low general engagement among the savers—however, those who respond to the letters by reallocating their portfolios benefit by having better portfolio performance and lower fees the upcoming years. Further, the response is more pronounced for investors with higher intelligence.

The two following articles exploit a scenario in the Swedish Premium Pension System (PPS), where some but not all savers were exposed to financial fraud. A primary focus is to characterize the type of savers who are more susceptible to become victimised by fraud, and to explore to what extent they are inclined to become active and divest when the fraud allegations become public. Hence, the second paper (co-authored with Johannes Hagen) studies exposure and reaction to financial fraud in one of the largest Swedish pension scandals, the Allra case. The third paper (co-authored with Johannes Hagen and Paul Nystedt) analyses the relationship between intelligence and fraud victimisation among investors in the the six companies who have been thrown out of the Swedish PPS by the authorities for not acting in their clients' best interests. The results of these two articles show that while individuals who ended up in the fraudulent companies were not socioeconomically different from others, they are more likely to work with financial advisers, some of which steered them into these funds. Furthermore, only few people who had invested in any of these funds divested after the fraudulent behaviour was revealed despite several information letters being sent from the authorities and heavy media exposure. Finally, intelligence is strongly protective against being defrauded. More intelligent people are less inclined to invest in fund firms that turn out to be fraudulent, and if they do, they are more likely to divest from them after, but not before, the fraud has been revealed.

Finally, the last paper addresses how grand-parenthood shapes labour supply for people who are close to retirement and its effect on the mobility of households. The results show a significant increase in retirement of similar magnitude for both grandmothers and grandfathers when their first grandchildren are born. Moreover, people who have a child become significantly more likely to move closer to their parents (i.e. the child's grandparents).



# Contents

<b>1. Introduction</b>	<b>13</b>
1.1 Pensions reforms . . . . .	14
1.1.1 Typology of pension reforms . . . . .	15
1.1.2 The Swedish pension reform . . . . .	16
1.2 Debates on the design of public pension schemes . . . . .	17
<b>2. Summary and contribution of each chapter</b>	<b>19</b>
2.1 Investors' activity in response to information about their pensions . . .	19
2.2 Financial fraud and individual investment behaviour . . . . .	20
2.3 Intelligence and financial fraud victimization . . . . .	22
2.4 Grandparenthood and retirement . . . . .	24
<b>References</b>	<b>26</b>
<b>I Investors' activity in response to information about their pensions</b>	<b>33</b>
1 Introduction . . . . .	35
2 Institutional setting . . . . .	39
2.1 The Swedish Premium Pension . . . . .	39
2.2 The Orange Envelope . . . . .	40
3 Geographical variation in the roll-out of the letters . . . . .	43
4 Data . . . . .	44
4.1 Data sources . . . . .	44
4.2 Sample restrictions . . . . .	44
4.3 Key variables and Descriptive statistics . . . . .	46
5 Empirical strategy . . . . .	47
6 Empirical results . . . . .	49
6.1 Effect of the information letters on investor activity . . . . .	49
6.2 Robustness checks . . . . .	52
7 Heterogeneous effects . . . . .	53
8 The effect of fund choices . . . . .	59
9 Conclusion . . . . .	61
References . . . . .	63
A Appendix . . . . .	67
<b>II Financial fraud and individual investment behaviour</b>	<b>77</b>
1 Introduction . . . . .	79
2 The premium pension . . . . .	83
2.1 Dubious fund providers . . . . .	85

3	Allra . . . . .	86
3.1	Formation and growth . . . . .	87
3.2	Fraud allegations and the legal process . . . . .	87
3.3	Allra's funds . . . . .	90
4	Data . . . . .	91
5	Selection into Allra . . . . .	94
5.1	Who invested in Allra? . . . . .	94
5.2	Fund choice history and the role of mass-market advisors . . . . .	96
6	Response to fraud allegations . . . . .	98
6.1	Were the fraud accusations anticipated? . . . . .	99
6.2	Effects of alleged fraud on investor activity . . . . .	100
6.3	Choice of outflow fund . . . . .	102
6.4	Spillover effects on investment behavior in other funds . . . . .	104
6.5	Media reports vs. SPA letters . . . . .	104
6.6	Heterogeneous responses . . . . .	106
7	Conclusion . . . . .	111
	References . . . . .	113
A	Appendix . . . . .	119

### **III Intelligence and financial fraud victimization 133**

1	Introduction . . . . .	135
2	Institutional background . . . . .	138
2.1	The Premium Pension . . . . .	138
2.2	Deregistered fund companies . . . . .	139
2.3	Hard frauds . . . . .	140
2.4	Soft frauds . . . . .	143
3	Data . . . . .	144
3.1	Pension data . . . . .	144
3.2	Enlistment data on intelligence . . . . .	144
3.3	Sample restrictions . . . . .	145
3.4	Descriptive statistics . . . . .	146
3.5	Performance of the deregistered funds . . . . .	148
4	Empirical framework . . . . .	151
4.1	Intelligence and fraud victimization . . . . .	151
4.2	Explaining the relationship between intelligence and fraud victimization . . . . .	157
4.3	Intelligence and reaction to fraud publicity . . . . .	162
5	Conclusion . . . . .	163
	References . . . . .	166
A	Appendix . . . . .	169

### **IV Grandparenthood and retirement 179**

1	Introduction . . . . .	181
2	Background . . . . .	185
2.1	Parental leave and formal childcare . . . . .	185
2.2	The Swedish pension system . . . . .	186

3	Data . . . . .	187
3.1	Sample restrictions . . . . .	187
3.2	Outcome variables . . . . .	188
3.3	Descriptive statistics . . . . .	188
4	Empirical strategy . . . . .	190
4.1	Identification . . . . .	192
5	Results . . . . .	193
5.1	Impact of grandparenthood on labour supply . . . . .	193
5.2	The impact of more grandchildren . . . . .	198
5.3	Robustness checks . . . . .	199
6	Heterogeneity . . . . .	201
7	Conclusion . . . . .	205
	References . . . . .	207
A	Appendix . . . . .	211

<b>JIBS dissertation series</b>	<b>223</b>
---------------------------------	------------



# 1. Introduction

Population ageing constitutes a dominant social transformation phenomenon in the 21st century. As people live healthier and longer lives, the share of older people in the total population grows. At the same time, the younger populations are shrinking due to declining fertility rates, causing a larger proportion of older people worldwide. On a global level, the absolute number of people aged 60+ has nearly doubled between 1994 and 2014, an annual growth rate three times the rate of other age groups (Álvarez-García et al., 2020). This disproportion is expected to accelerate in the coming decades, whereby in most countries, people aged 60+ are projected to be the majority by 2050 (Bloom and Luca, 2016; United Nations and Social Affairs, 2015).

While the increase in life expectancy is fundamentally good for each individual, it poses several societal challenges, especially the financing of pensions and long-term healthcare. Pension systems are intended to create security in old age through consumption smoothing, redistribution, providing poverty relief and insurance against low income and depletion of wealth (Barr and Diamond, 2008). A change in population structure affects the pension systems in several ways.

First, with the extension of life expectancy, the number of pensioners will rise, increasing the old-age dependency ratio, i.e., the number of older people relative to the working age population. Second, as most social security systems depend on payroll tax revenue to finance current pension benefits, population ageing increases pension spending relative to GDP and gives rise to pension under-funding (Elmendorf and Sheiner, 2017, Mitchell, 2018, 2020). For example, in OECD, expenditures on health-care and pensions account for two-thirds of total public spending, with the former being the dominant social expenditure (OECD, 2013a,b, 2019). Third, older people face many other risks to their labour income, savings, and health and long-term care expenditures (Lusardi et al., 2020, Mitchell, 2020, Yu et al., 2021). For example, due to poor financial literacy and declining capabilities, older individuals may make mistakes with their credit cards, become targets of financial predators, or withdraw retirement assets too quickly (Agarwal et al., 2009; DeLiema et al., 2020; Lusardi and Mitchell, 2014).

These risks exert pressure on public institutions and threaten the fiscal sustainability of pension systems (Alaminos et al., 2020, de Bresser and Knoef, 2015, Knoef et al., 2016, Mitchell, 2020, OECD, 2013a,b, 2019). To improve pension system sustainability, substantial reforms are high on the agenda of many governments. The common objectives of these reforms are to reduce the state budget burden on pensions, help diversify risk, and promote adequacy of retirement resources. Despite significant heterogeneity among the reforms in each nation, they broadly address several common policy elements to help maintain the pension systems' financial stability, such as

expanding coverage of occupational pensions, changing statutory retirement age, and altering contributions and benefits formulas.

However, this new wave of reforms brings challenges. These include forcing changes in industrial structure and labour-force composition, the decline in long-term interest rates, longevity risks, low engagement among participants, and benefits formulas favouring long-tenured employees. While some reforms ensure fiscal sustainability of pension systems, others lower the generosity of pension promises, endangering the adequacy of pension incomes relative to life expectancy (OECD, 2013a,b, 2019).

Overall, these reforms thus come with significant trade-offs due to the interdependency of their intended objectives. As a result, there is a considerable debate about the well-being of older populations in their financial matters. In addition, while the expansion and coverage of occupational pensions – i.e., those financed by the employers – may reduce a government's budget burden, diversify risks, and promote the adequacy of retirement resources, they also tend to lower the generosity of the overall pension promise, jeopardising their objective of sufficiency in pension income.

This thesis explores different aspects of individuals' pension investment and retirement behaviour in light of these reforms. Uncertainties brought by the changes amplify the need to better understand individual savings and retirement decisions, the dynamics of old-age labour force participation, and the critical need for policy measures to make pension systems financially sustainable (Broadbent et al., 2006; Fang, 2016). Scientific evidence is still in the development stage, and implications are yet to be fully appreciated. In my research, I address the following interrelated questions: (1) How does pension information affect investment behaviour? (2) How do savers respond to information about fraud? (3) To what extent does intelligence relate to pension fraud victimisation? and (4) How does becoming a grandparent affect the labour supply of older workers? By addressing the above questions, this thesis contributes to understanding individual pension savings and retirement behaviour and the current policy discussions on pension system design and reforms. Before presenting the answers I found in detail, I will first briefly describe the recent pension reforms, both internationally and in Sweden, below.

## 1.1. Pensions reforms

Transferring resources from the working generation to the older generation can be traced back to the beginning of modern civilisation. However, the process was not as universal or formalised as the systems existing now (Hagen, 2017). Pension systems, as understood today, are intended to provide security in old age through consumption smoothing, providing insurance against low income and depleted wealth in old age, poverty relief, and redistribution of financial resources (Barr and Diamond, 2008). The majority of modern pension systems, especially in Western countries, resulted from the expansion of public pension systems in the latter half of the twentieth century. This section briefly describes the range of current pension reforms in general in section (1.1.1) and Swedish pension reform in specific in section (1.1.2).

### *1.1.1. Typology of pension reforms*

As the pension landscape changes, different countries have adopted different policies and practices that best suit their current situation to help maintain the financial stability of their pension systems. However, some common reform trends fall into two main categories, namely parametric and structural reforms.

Parametric reforms involve legislative changes to the system's essential features, such as increasing the statutory retirement age and changing how benefits are calculated. In the OECD, for example, most countries have made significant reforms regarding benefits, financing arrangements, or both. The majority of the 34 countries have enacted policies in the last decade to increase the retirement age such that retirement at age 67 is now quite common. Countries such as Iceland, Norway, Sweden, Denmark, Germany, the United Kingdom, and the United States have changed their public pension eligibility age or are doing so. Several others, including Australia, Belgium, Portugal, and the United Kingdom are equalising retirement ages for men and women. Other countries like the Czech Republic, Greece, Hungary, Italy, Japan, Korea, and the United States are implementing pension reforms that will affect both men and women (OECD, 2013b).

Structural reforms are also high on the policy agenda in many countries. To guarantee the stability and progressive nature of pension systems, the goal of structural reforms has been to partially or completely replace the former Pay-as-you-go (PAYG) schemes, where pension benefits are paid out of the current revenue sources, with funded plans. PAYG schemes are usually run by governments. Fully-funded schemes are either public, individual, or employer-based. In these schemes, pension benefits depend on yearly contributions over time that are managed by a fund that invests in financial assets and any returns are credited to individual accounts. To be viable, they have to return sufficient funds to pay accrued benefit liabilities when they are due (Barr and Diamond, 2008).

The most prominent reformation is a gradual shift from traditional defined benefit (DB) plans to defined contribution (DC) plans or hybrid arrangements that combine features of both types. Workers in DB plans are promised a stream of regular monthly income after retirement, making employers bear the investment return risks. In contrast, workers in DC plans contribute funds in their own individual accounts, and employers contribute as well, sometimes matching the employee contribution or even contributing slightly more. The accounts are managed by the plan sponsor and employees may have choices in selecting investment funds. The contributions are used to purchase assets. Over time, the funds accumulate, with returns earned to those assets used to finance consumption during retirement through an annuity, lump-sum transfer, or regular periodic withdrawals. Hence, under the DC plan, it is the workers who bear the majority of the investment and longevity risks entirely. DC plans are thus less generous than the traditional DB plan (Van Rooij et al., 2007).

While DB plans remain the dominant form of pension in some countries, in others, DC schemes now account for the majority of invested assets in occupational pension plans (Fang, 2016). For example, Butrica et al. (2009) show that the overall proportion of private wage and salary workers participating in DC plans increased from 8% to 31% between 1980 and 2008, while it decreased from 38% to 20% in DB plans during the same period. Twenty-five years ago, most US employer pension plans were DB,

but most are now DC. The same trend is observed in other industrialised countries in Europe, including the United Kingdom, Sweden, Denmark, and the Netherlands. Among nations in Latin America, between 1980 and 2005, starting with Chile, 11 countries out of 20 have partially or fully changed their pensions from DB or PAYG to fully-funded DC plans. These include Bolivia, Mexico, El Salvador, Dominican Republic, Peru, Colombia, Uruguay, Costa Rica, and Panama (Mesa-Lago and Valero, 2020).

### *1.1.2. The Swedish pension reform*

The current public pension system in Sweden results from a reform carried out in the 1990s and comprises three tiers. Two are earnings-related components; the income pension and the premium pension; the third is the minimum guarantee, which serves as a means-tested pension supplement. The earnings-related components are both defined contributions, implying that the retirement pension results from the accumulated contributions over time. Every participant contributes a total of 18.5 percent of their earnings, whereby 16 and 2.5 percentage points are allocated to the income pension and premium pension, respectively. The income pension is a Notional defined contribution (NDC)<sup>1</sup> and forms a main part of the system. The Premium Pension System (PPS) is a financial defined contribution (FDC).<sup>2</sup> The minimum guarantee, on the other hand, is financed by tax revenue.

Sweden was among the first countries to shift from DB to DC by introducing the NDC and the mandatory individual account component, the PPS. The PPS (which will be discussed in three chapters of this thesis) was established in 2000 and is administered by the Swedish Pensions Agency (SPA). It has almost 7.5 million retirement savers today, and about 475 mutual fund options as of January 2022. Among its main features are free entry, unconstrained competition, and pro-choice, meaning every participant can form their own investment portfolio by choosing up to five fund options or be defaulted in the case of no active choice. Savers can invest their money in any of the funds available on the premium pension platform and can even reallocate their holdings daily. With approval from the SPA, any fund company licensed to do business in Sweden can participate in the system by simply signing a contract that specifies the reporting requirements and spells out their fee structure.

The PPS was established to allow participants to choose options for higher returns in the capital markets according to their risk preferences. During its inauguration, the government launched an extensive campaign urging citizens to decline the default fund and instead form their own portfolio; about two-thirds of the savers did. Ever since, however, the PPS system has turned out to be a prime example of widespread inactivity and inertia among pension savers (Cronqvist and Thaler, 2004; Cronqvist et al., 2018).

A few years after the PPS launch, a large number of professional advisors began targeting retirement investors. Using aggressive telemarketing techniques, they

---

<sup>1</sup>Benefits are based on the amount credited to individual accounts, but contributions are not invested in market assets. This is similar to the classical PAYG scheme, but different when determining the size of the benefits.

<sup>2</sup>Benefits are based on the amount credited to individual accounts, where contributions are invested in financial market assets.

sought to obtain agreements to manage the accounts of vast layers of the population in exchange for a yearly fee with little investor contact. This situation induced a high degree of coordination among customers' fund trades, benefiting the advisors through commissions. The SPA banned such coordinated trades in 2011. However, many of the larger advisor firms responded to the ban on coordinated robot trades by forming their own pension funds to which they would steer their pension customers.

Due to few restrictions on fund providers entering the PPS in its early years, some of them attracted a substantial number of savers through questionable marketing strategies. Over time, it became apparent that some of the mutual fund firms operating on the platform were not acting in their clients' best interests and were thus expelled from the system by the SPA. Further, starting in 2018, the SPA began making system reforms by implementing stricter application reviews of the mutual funds and the fund managers, including continuous monitoring of managers' conduct. These reforms sharpened administrative control, while the higher demands on the fund providers weeded out the number of funds in the PPS from about 800 in 2018 to the current 475 funds.

Due to its nature, formulation, and institutional setup, the PPS has attracted significant interest among researcher scholars and policymakers. It is often cited as a significant model of both policy and design of social security systems among other countries (e.g. Cronqvist and Thaler, 2004; Cronqvist et al., 2018; Hagen, 2017; Hagen et al., 2022; Dahlquist and Martinez, 2015; Dahlquist and Martinez, 2015; Dahlquist et al., 2017; Lindqvist et al., 2018; Sundén, 2006).

## 1.2. Debates on the design of public pension schemes

Reformed pension schemes in many nations contain attractive features, such as flexibility of investment options. However, the new schemes shift responsibilities and risks onto beneficiaries, making individuals' economic and financial environments more complex and difficult to understand. Defined contribution and hybrid schemes assume that pension savers will make desirable financial choices, which is not always true due to limited financial knowledge and low engagement in monitoring investments. Recent research has shown that many pension savers have low interest, lack enough financial knowledge, and are little aware of pension-related decisions they could be taking (Benartzi and Thaler, 2001, Chetty et al., 2014, Choi et al., 2004, De Nardi et al., 2010, Lusardi and Mitchell, 2011, Madrian and Shea, 2001, Thaler and Benartzi, 2004).

On top of this, frequent changes in regulations further weigh down on people's already limited understanding of the pension system. This entails the need for savers to be regularly informed and updated about their pensions and the types of risk being transferred to them. Lusardi and Mitchell (2007a,b) show that easy access to financial information and appropriate planning may have a positive impact on decision-making for retirement. But not all individuals benefit from this opportunity due to either their lack of financial knowledge (Lusardi and Mitchell, 2011); self-control problems; behavioural biases (Benartzi and Thaler, 2001; Benartzi and Thaler, 2002); the overall quality of investment choices participants make (Thaler, 2018; Choi et al., 2004); or

the overwhelming multitude of possible pension choices.

Equally important, the new plans often assume that people will respond rationally to the incentives for saving by using adequate information and their mental capacities to understand the best choices that can maximise their expected utility (Lusardi and Mitchell, 2011). A key problem, however, is that the many changes to the system have tended to increase the degree of uncertainty regarding pension benefits during retirement. A major challenge for governments and the pension industry is thus to ensure that savers know about system and benefit plan changes and their potential impact on their retirement income. Pension providers are thus challenged to find way to explain information to a wide audience of very heterogeneous participants, some of whom may be better than others at handling more complex scenarios due to their higher cognitive ability, patience, and overall better decision-making skills.

Another concern is that mismanagement and fraudulent behaviour in savers' investments have become increasingly common (DeLiema et al., 2020; Engels et al., 2020; Wei et al., 2021). Pension savings may be disproportionately targeted as pension savers are more susceptible to behavioural biases such as status quo bias, procrastination, and laziness. Because savers have heterogeneous skills when it comes to their financial knowledge and their ability to recognise fraud, financial scams pose significant challenges to savers and government institutions. An important policy question is whether aging participants' skill sets are resilient to increasing fraudulent schemes. Following the growing trend among savers of inactive behaviour (not making a trade) in various funded pension schemes observed by several studies, including Thaler (2018), there are increasing calls for better understanding of who reacts when, and what motivates participants to take action or not (Eberhardt et al., 2016).

Regarding the ageing population, one of the most topical questions in pension policy is how to delay the age at which workers retire. Many modern pension systems have simply increased the statutory retirement age to encourage people to work longer. While effective, the process varies considerably across workers at different age levels, and older workers are likely to have a more mixed response towards these policies. Some decide to retire early and claim reduced pensions even if they are not old enough for the full retirement pension. In addition, there are other factors involved that are not easily adjusted through legislation, such as personal preferences, self-interest, and trade-offs resulting from family structures. For instance, grandchildren may provide a strong disincentive to working longer, since grandparents can offer a flexible and inexpensive source of childcare (Frimmel et al., 2020; Rupert and Zanella, 2018; Zanella, 2017).

## 2. Summary and contribution of each chapter

This section offers a summary of the main findings of this thesis. For each of the four papers included, I highlight the context of the research, present each paper's key results, and elaborate on key contributions in the individual papers.

### 2.1. Investors' activity in response to information about their pensions

The first paper, *Investors' activity in response to information about their pensions* investigates how pension communication affects the trading behaviour among pension savers. The paper builds on previous literature, which indicates that pension information provision can increase both involvement and the ability to make good decisions (Duflo and Saez, 2003; Engström and Westerberg, 2003; Goda et al., 2014; Debets et al., 2022; Dolls et al., 2018; Knoef et al., 2020; Brüggem et al., 2019; Mastrobuoni, 2011). However, while previous studies have established that financial education is often key to successful retirement funding, the role of pension communication remains limited (Debets et al., 2022; Dolls et al., 2018 ).

Several pension plans, including Sweden's, have encouraged engagement in pension decisions by sending periodic statements regarding individuals' pension positions to assist savers. Sweden introduced information letters in 1999 dubbed "Orange envelope" to provide both general and personalised information to savers about their pension saving holdings. The study described in this paper uses the fact that these letters are mailed annually and stepwise in different counties to all pension system participants, thus providing unique variations helpful to analysing their causal impacts.

Using this geographical variation in the timing of the distribution of information letters sent from the SPA to savers, results show that investor trading activity following the letters increases by about 50 percent relative to the period before the letters arrive. However, the letters' economic relevance is shown to be limited due to low general engagement among savers. The unique nature of the administrative data provides a powerful lens to study important dimensions of heterogeneity. Heterogeneity analysis shows that the response is more pronounced for more engaged investors with higher intelligence and previously nudged by other informational campaigns. Further, those who respond to the letters by reallocating their portfolios benefit from better investment performance and lower fees in the upcoming years. This suggests a hidden cost for

inattentiveness that may result in poorer investment results among pension investors. Inattention exposes the savers to excessive risks and low returns if most workers lack knowledge about financial products or the interest or foresight to make good decisions.

This study contributes to the literature in three ways. First, I provide new evidence of how information can affect saving behaviour, thus adding to the debate about increasing consumer interest in retirement planning. Second, my paper contributes to the literature on the effect of government interventions on pensions and retirement savings, particularly concerning how to increase consumer interest in retirement planning. Many governments expend substantial effort and large amounts of money to subsidise retirement accounts to improve retirement savings. In contrast, this paper provides evidence for the effectiveness of information as a type of non-subsidy policy and how it can affect investors' behaviour and savings. These results provide valuable insights for policymakers interested in the role of advertisement campaigns in improving investment behaviour in the pension system. Third, taking advantage of detailed data, I study responses across various socio-economic demographics, thus providing possible underlying mechanisms.

Among my conclusions, given that pension information enhances individuals' interest in pension-related decisions, future policies should seek to increase this interest among passive savers and those with low cognitive abilities. The SPA provides pension information using various channels to encourage savers to make an active choice; nevertheless the engagement is still low. Furthermore, the responses for these interventions are different across different demographic groups. Savers with higher socioeconomic status and high intelligence are more engaged, and the communication mainly helps those who probably are already well-off with higher intelligence.

This suggests that policymakers should formulate special programs to target specific subgroups, especially those with lower financial ability, as well as prompting savers at timely moments, making future benefits more salient by emphasising the potential of long-term saving. Another possible mechanism could be to modify the communication that makes savers pre-commit to receiving extra information or to take action once the communication has been received.

In the current set-up, there is no control group that does not receive the letters for prolonged periods (since everyone receives them once a year). Hence, further work is needed to evaluate the long run effects and the overall welfare effects of these results. Further, while the study showed that the letters had a lower economic impact in the PPS domain, they might affect investment decisions in other financial environments outside the pension system, such as stock trading. Thus searching for spillover effects in other financial domains is worth investigating in future research.

## **2.2. Financial fraud and individual investment behaviour**

The second and third paper address financial fraud victimisation. Their primary focus is to characterise the type of savers who are more susceptible to becoming victimised by fraud and to explore to what extent they are inclined to become active or divest when the fraud allegations become public. These papers exploit a true scenario in the

PPS where some savers, but not others, were exposed to a significant financial fraud.

The second paper, *Financial fraud and individual investment behaviour (with Johannes Hagen)* studies exposure and reaction to financial fraud in one of the largest and most prominent Swedish pension scandals, the Allra case. The paper builds on previous literature indicating that fraud revelation has a statistically significant effect on investment behaviour (Giannetti and Wang, 2016; Gurun et al., 2017; Sane et al., 2017). Using individual-level data on fund choices in the Swedish PPS, the paper documents the causal effects of financial fraud in Allra, one of the largest and most well-known funds in which the firm's managers applied infamous marketing strategies to defraud investors. The media coverage was extensive, and the SPA sent multiple information letters to the affected investors. The actions of Allra managers looked at first like just questionable pension fund decisions until the fraud revelation was exposed. Investors thus believed at first that they had made apparently poor but not demonstrably wrong choices (before they learned that it was fraud), indicating that ordinary people can make simple mistakes that lead to significant financial consequences.

Results show that, while Allra savers were no different than the wider population in socio-economic diversity, they were more likely to subscribe to a certain group of financial advisors who targeted a large proportion of the population. The study shows that a broad segment of the population may be targets of and susceptible to the aggressive marketing campaigns of unscrupulous advisors and fund providers.

After the fraud revelation, only one-third of the start-of-the-year investors divested from Allra within four months of the first news. We argue that this response is surprisingly small, considering that the majority of Allra investors should have learned about the fraud through the media and information letters, and that huge money that was at stake. However, the low response may be attributed to the fact that savers were uncertain about their best options to divest, as well as to the failed regulatory intervention to deregister Allra's funds from the PPS platform quickly enough.

Moreover, our results show that the probability of divesting gained momentum after the arrival of the information letters and that two-thirds of those who left Allra chose to move their money to the state-run fund, AP7 (the default fund in the PPS). While the letters also repeatedly highlighted AP7 as good investment alternative, the popularity of the default fund can be interpreted as a sign of lost trust in the system. Further, we found that the probability of divesting was higher among savers with higher socio-economic status. This suggests that pension frauds may reinforce the inherent inequality in any funded system.

In contrast to other existing studies whose focus has been on stock markets, our study is the first to document individual investment behaviour due to fraud in the pension fund industry. Second, due to high-quality individual-level data, it's possible to distinguish causality from correlation by comparing the fund choices of pension savers in Allra and those who never had any funds in Allra, both before and after the fraud period. Third, we contribute to the existing literature that explores the roles of heterogeneity in financial markets by more clearly characterising which people are more likely to respond to financial scams. We also contrast the impact of information letters versus the media as an intervention policy tool in a case of pension financial fraud.

Overall, the Allra case provides an ideal setting to study the effects of financial

fraud on investment behaviour. First, because the optimal choice, i.e., to opt-out of Allra was clear, the study definitively shows the negative consequences of inertia in pension fund investing. Second, the events surrounding the fraud make it possible to evaluate the response to information interventions by exploiting several information letters sent out to all Allra customers by the Pensions Agency. In combination with individual background information, access to daily pension investment data allows us to characterise those who did/did not react to the fraud via the information letters. Finally, the Allra case affected a substantial number of individuals. Before the allegations, the fund had a sizable portion of retirement savers – about 123,217 – with over 2.0 billion USD in assets, making it unique internationally.

Our results ultimately indicate that individuals are vulnerable to making mistakes that have considerable consequences, thus calling for a better design of the existing DC pension systems' environment and strict entry requirements for potential fund providers. As more funded pensions become common, many people will have more pension savings to manage, which only incentivises fraudulent firms to take advantage of investors' retirement resources. In addition, as various measures are promoted that seek to induce people to save more, such as tax relief and auto-enrolment, individual differences and behavioural biases may exacerbate the consequences of fraud for individual investors. Therefore, understanding how people react to shocks can help create a good model for assessing whether information interventions can work to rectify market failures.

## 2.3. Intelligence and financial fraud victimization

The third paper, *Intelligence and financial fraud victimization (with Johannes Hagen and Paul Nystedt)* studies how intelligence is associated with the victimisation of pension fraud. In particular, the paper studies the relationship between intelligence and fraud victimisation among investors in the six companies that authorities threw out of the Swedish PPS for not acting in their clients' best interests. Previous literature shows that financial literacy correlates with a wide range of other financial behaviours and outcomes such as planning for retirement (Lusardi and Mitchell, 2007b; Clark et al., 2015); saving behaviour and wealth accumulation (Anderson et al., 2017; Lusardi and Mitchell, 2007b; Stango and Zinman, 2008; Van Rooij et al., 2012); participation in the stock market (Anderson and Robinson, 2021; Kimball and Shumway, 2006; Christelis et al., 2010; Van Rooij et al., 2011); choice in investment portfolio (Choi et al., 2009; Duarte and Hastings, 2012), portfolio diversification and the frequency of stock trading (Graham et al., 2009); and poor mortgage choices (Moore, 2003). No attempt has yet been made to investigate how intelligence protects people from fraud victimisation, especially in the case of pension funds. In addition, the few existing empirical studies on savings schemes have been based on self-reported information, making it difficult to measure precisely the prevalence of financial fraud, and thus giving us only limited insight about the characteristics of actual fraud victimization (Andreou and Philip, 2018; DeLiema et al., 2020; Engels et al., 2020).

Our study uses data that combines the Swedish military enlistment register data on

cognitive skills and detailed information on individuals' investment holdings in the PPS. The novelty of the research design relies on investors' variation in exposure to fraud funds. The analysis compares the likelihood of ending up in fraudulent companies before and after a fraud. Our data utilises two groups. The first consists of those whose pensions were invested at any time in any of the fraud funds, and the second group consists of a random 5% of investors who never had any investments in the fraud funds. One strength of this study is that it uses high-quality individual register data where the overall trajectory of investment behaviour can be analysed.

The paper finds a strong negative association between intelligence and financial fraud victimisation. The richness of the data allows us to study the mechanisms through which savers are victimised. Results also show that the response is not driven by investors' higher trade frequency, but rather is characterised by savers' likelihood to subscribe to financial advisors. Interestingly, intelligence is associated with divesting from the fraud firms after the fraud has been revealed and not before. Overall, the findings suggest that fraud tactics are increasingly complex, and greater intelligence provides the degree of sophistication necessary to detect fraud.

The findings in this study matter for policy makers for two reasons. First, given the already low activity rates recorded in funded pensions, incidences of fraud may distort peoples' trust in the pension system and further amplify the level of inactivity. For instance, low activity levels among Swedish pension savers, especially among new entrants, could partly be a result of the pension fraud scandals studied here. Also, people may decide not to participate in the stock market due to external shocks such as market and government failures and corporate frauds. We believe this is a policy-relevant question because if financial mistakes are a function of cognitive limitations, a rapidly ageing society has implications for designing pension systems and individual saving behaviour. Second, assuming these external shocks likely signal a loss of trust in the pension system, it may force people to hold less equity in the financial markets. In that case, this may generate negative externalities such as poor retirement decisions and may distort labour supply choices during retirement. Third, given low engagement, low financial literacy levels in pensions, and limited information intervention, it is not a surprise that some fund providers take advantage of investors.

No single factor uniquely predicts victimization across different types of investors, even within the category of investment fraud. However, intelligence does protect against being financially victimised; it is people of low intelligence who suffer the most. This fact may eventually translate into widening socioeconomic gaps in retirement and erode the legitimacy of the pension system. To ensure efficiency, regulators should formulate comprehensive regulations, frequently track and monitor fund providers, and have suitable tools to assess, detect, and fight against financial fraud. Prevention programs should educate consumers about various types of fraud and increase awareness among financial services professionals.

## 2.4. Grandparenthood and retirement

The fourth paper, *Grandparenthood and retirement* examines how grandparenthood shapes the labour supply of grandparents around their retirement period and its effect on the mobility of households. Working-age grandparents make large time transfers to their offspring in the form of grandparent-provided childcare, the main component of informal childcare arrangements in many developed countries. This method of attenuating the positive effects of working longer has been under-researched so far (Frimmel et al., 2020; Rupert and Zanella, 2018; Zanella, 2017). The value of grandparent childcare in Sweden is especially important. Sweden is known for its generous family policy, organised to provide family economic security and physical well-being. The government has the highest commitment to providing family services, including subsidised childcare, free dental and health care, and library services. The objective is to make it possible for parents to combine parenthood with employment or studies, while still ensuring that their children are raised under conditions favourable for their well-being, development, and learning (Skolverket, 2000).

Although grandparents often provide significant support to their children and grandchildren, it is often difficult to prove if this association is causal due to the endogeneity of fertility preferences, reverse causality, and data availability. Previous studies have attempted to examine the relationship between grandparenthood and labour supply using the sex of the first offspring or teenage birth ratios as instrumental variables. The assumption is that the sex of the first offspring and teenage birth ratios generate arguably exogenous variations in the timing of grandparenthood or grandmothers' care decisions. While this approach solves some of the above problems, it requires strong assumptions on the instruments while only capturing the local treatment effect.

The research here addresses the causality question more explicitly by leveraging conditionally random variation in the births of first grandchildren. The method estimates grandchildren's treatment effects under the assumption that the first grandchild's arrival is reasonably exogenous to labour supply conditional on underlying life-cycle trends such as retirement age and gradual ageing over time. In addition, the analysis differs from previous studies as it allows me to explore a significant margin of how the effect evolves when one becomes a grandparent, providing a vital heterogeneity between having young versus older grandchildren. Further, while IV studies require both the grandparent status and the timing of grandparenthood to be random, the event study used in this paper only requires the latter to be random.

In this final chapter, I seek to answer how grandparenthood shapes the labour supply of grandparents around their retirement period and its effect on the mobility of households. The results show a significant decrease in labour supply which is somewhat similar for grandfathers and grandmothers. The effects are larger for grandparents in the upper half of the income distribution. In addition, findings show that the arrival of grandchildren increases the probability of grandparents moving significantly closer to their offspring.

The results have important implications for designing and implementing public policies towards parental leave, childcare provision, and the prospective labour supply of cohorts at grandparent age. First, the findings suggest that grandchildren make grandparents less elastic to financial incentives and other regulations that promote longer

working lives, even in a country with generous family policies. The time constraint noted in this paper shows that childcare transfers come at the expense of older workers' reduced opportunity of labour supply, which is a trade-off that should be considered when designing retirement, family, and taxation policies. For Sweden, the response is likely due to their preferences and self-interests, and results from bargaining between family structures or complementing existing childcare arrangements. Therefore, policymakers need to be aware of such factors that are outside of the state pension system and can pose barriers to working longer. They may not be easily adjusted through legislation.

Moreover, as fertility rates decline, grandchildren are becoming more valuable today; thus, older people may play an increasingly vital role in their grandchildren's lives at the expense of the grandparents' labour supply. A potential suggestion is to develop policies that jointly target both financial incentives and regulations, while keeping in mind other personal motives that affect retirement saving. Third, the results also highlight the role of the extended family and the importance of intergenerational persistence in older workers' economic outcomes. Policymakers need to consider the long-term economic impacts for future generations when introducing new policies since intergenerational spillovers can stretch over multiple generations.

## References

- Agarwal, S., Driscoll, J. C., Gabaix, X., and Laibson, D. (2009). The age of reason: Financial decisions over the life cycle and implications for regulation. *Brookings Papers on Economic Activity*, 2009(2):51–117.
- Alaminos, E., Ayuso, M., and Guillen, M. (2020). Demographic and social challenges in the design of public pension schemes. In *Economic Challenges of Pension Systems*, pages 33–55. Springer.
- Álvarez-García, J., Durán-Sánchez, A., Peris-Ortiz, M., and Cruz del Río-Rama, M. d. d. l. (2020). Public pension systems: Bibliometric study of academic publications in scientific journals. In *Economic Challenges of Pension Systems*, pages 1–32. Springer.
- Anderson, A., Baker, F., and Robinson, D. T. (2017). Precautionary savings, retirement planning and misperceptions of financial literacy. *Journal of Financial Economics*, 126(2):383–398.
- Anderson, A. and Robinson, D. T. (2021). Financial literacy in the age of green investment. *Swedish House of Finance Research Paper*, (19-6).
- Andreou, P. C. and Philip, D. (2018). Financial knowledge among university students and implications for personal debt and fraudulent investments. *Cyprus Economic Policy Review*, *Forthcoming*.
- Barr, N. and Diamond, P. (2008). *Reforming pensions: Principles and policy choices*. Oxford University Press.
- Benartzi, S. and Thaler, R. H. (2001). Naive diversification strategies in defined contribution saving plans. *American Economic Review*, 91(1):79–98.
- Benartzi, S. and Thaler, R. H. (2002). How much is investor autonomy worth? *The Journal of Finance*, 57(4):1593–1616.
- Bloom, D. E. and Luca, D. L. (2016). The global demography of aging: facts, explanations, future. In *Handbook of the Economics of Population Aging*, volume 1, pages 3–56. Elsevier.
- Broadbent, J., Palumbo, M., and Woodman, E. (2006). The shift from defined benefit to defined contribution pension plans—implications for asset allocation and risk management. *Reserve Bank of Australia, Board of Governors of the Federal Reserve System and Bank of Canada*, pages 1–54.
- Brüggen, E. C., Post, T., and Schmitz, K. (2019). Interactivity in online pension planners enhances engagement with retirement planning—but not for everyone. *Journal of Services Marketing*, 33(4):488–501.
- Butrica, B. A., Iams, H. M., Smith, K. E., and Toder, E. J. (2009). The disappearing defined benefit pension and its potential impact on the retirement incomes of baby boomers. *Soc. Sec. Bull.*, 69:1.

- Chetty, R., Friedman, J. N., Leth-Petersen, S., Nielsen, T. H., and Olsen, T. (2014). Active vs. passive decisions and crowd-out in retirement savings accounts: Evidence from Denmark. *The Quarterly Journal of Economics*, 129(3):1141–1219.
- Choi, J. J., Laibson, D., and Madrian, B. C. (2009). Why does the law of one price fail? an experiment on index mutual funds. *The Review of Financial Studies*, 23(4):1405–1432.
- Choi, J. J., Laibson, D., Madrian, B. C., and Metrick, A. (2004). For better or for worse: Default effects and 401 (k) savings behavior. In *Perspectives on the Economics of Aging*, pages 81–126. University of Chicago Press.
- Christelis, D., Jappelli, T., and Padula, M. (2010). Cognitive abilities and portfolio choice. *European Economic Review*, 54(1):18–38.
- Clark, J. W., Utkus, S. P., and Young, J. A. (2015). Automatic enrollment: The power of the default. *Valley Forge, PA: Vanguard*.
- Cronqvist, H. and Thaler, R. H. (2004). Design choices in privatized social-security systems: Learning from the Swedish experience. *American Economic Review*, 94(2):424–428.
- Cronqvist, H., Thaler, R. H., and Yu, F. (2018). When nudges are forever: Inertia in the Swedish premium pension plan. In *AEA Papers and Proceedings*, volume 108, pages 153–58.
- Dahlquist, M. and Martinez, J. V. (2015). Investor inattention: a hidden cost of choice in pension plans? *European Financial Management*, 21(1):1–19.
- Dahlquist, M., Martinez, J. V., and Söderlind, P. (2017). Individual investor activity and performance. *The Review of Financial Studies*, 30(3):866–899.
- de Bresser, J. and Knoef, M. (2015). Can the dutch meet their own retirement expenditure goals? *Labour Economics*, 34:100–117.
- De Nardi, M., French, E., and Jones, J. B. (2010). Why do the elderly save? the role of medical expenses. *Journal of Political Economy*, 118(1):39–75.
- Debets, S., Prast, H., Rossi, M., and van Soest, A. (2022). Pension communication, knowledge, and behaviour. *Journal of Pension Economics & Finance*, 21(1):99–118.
- DeLiema, M., Deevy, M., Lusardi, A., and Mitchell, O. S. (2020). Financial fraud among older Americans: Evidence and implications. *The Journals of Gerontology: Series B*, 75(4):861–868.
- Dolls, M., Doerrenberg, P., Peichl, A., and Stichnoth, H. (2018). Do retirement savings increase in response to information about retirement and expected pensions? *Journal of Public Economics*, 158:168–179.
- Duarte, F. and Hastings, J. S. (2012). Fettered consumers and sophisticated firms: evidence from mexico’s privatized social security market. Technical report, National Bureau of Economic Research.

- Duflo, E. and Saez, E. (2003). The role of information and social interactions in retirement plan decisions: Evidence from a randomized experiment. *The Quarterly Journal of Economics*, 118(3):815–842.
- Eberhardt, W., Brüggem, E., Post, T., and Hoet, C. (2016). Segmentation of pension plan participants; identifying dimensions of heterogeneity. *Netspar Design Paper No. 47*.
- Elmendorf, D. W. and Sheiner, L. M. (2017). Federal budget policy with an aging population and persistently low interest rates. *Journal of Economic Perspectives*, 31(3):175–94.
- Engels, C., Kumar, K., and Philip, D. (2020). Financial literacy and fraud detection. *The European Journal of Finance*, 26(4-5):420–442.
- Engström, S. and Westerberg, A. (2003). Which individuals make active investment decisions in the new Swedish pension system? *Journal of Pension Economics & Finance*, 2(3):225.
- Fang, H. (2016). Insurance markets for the elderly. In *Handbook of the Economics of Population Aging*, volume 1, pages 237–309. Elsevier.
- Frimmel, W., Halla, M., Schmidpeter, B., and Winter-Ebmer, R. (2020). Grandmothers' labor supply. *Journal of Human Resources*, pages 0419–10144R1.
- Giannetti, M. and Wang, T. Y. (2016). Corporate scandals and household stock market participation. *The Journal of Finance*, 71(6):2591–2636.
- Goda, G. S., Manchester, C. F., and Sojourner, A. J. (2014). What will my account really be worth? experimental evidence on how retirement income projections affect saving. *Journal of Public Economics*, 119:80–92.
- Graham, J. R., Harvey, C. R., and Huang, H. (2009). Investor competence, trading frequency, and home bias. *Management Science*, 55(7):1094–1106.
- Gurun, U. G., Stoffman, N., and Yonker, S. E. (2017). Trust busting: The effect of fraud on investor behavior. *The Review of Financial Studies*, 31(4):1341–1376.
- Hagen, J. (2017). Pension principles in the Swedish pension system. *Scandinavian Economic History Review*, 65(1):28–51.
- Hagen, J., Hallberg, D., and Lindquist, G. S. (2022). A nudge to quit? the effect of a change in pension information on annuitisation, labour supply and retirement choices among older workers. *The Economic Journal*, 132(643):1060–1094.
- Kimball, M. and Shumway, T. (2006). Investor sophistication, and the participation, home bias, diversification, and employer stock puzzles. *Unpublished Manuscript, University of Michigan*.
- Knoef, M., Been, J., Alessie, R., Caminada, K., Goudswaard, K., and Kalwij, A. (2016). Measuring retirement savings adequacy: developing a multi-pillar approach in the netherlands. *Journal of Pension Economics & Finance*, 15(1):55–89.

- Knoef, M., Been, J., and Putten, M. v. (2020). Raising pension awareness through letters and social media: evidence from a randomized and a quasi-experiment. *Netspar Design Paper 147*, April 2020.
- Lindqvist, E., Paues, F., and Vestman, R. (2018). The role of cognitive and non-cognitive skills for investment behavior. Technical report, Working Paper.
- Lusardi, A. and Mitchell, O. S. (2007a). Baby boomer retirement security: The roles of planning, financial literacy, and housing wealth. *Journal of Monetary Economics*, 54(1):205–224.
- Lusardi, A. and Mitchell, O. S. (2007b). Financial literacy and retirement planning: New evidence from the Rand American Life Panel. *Michigan Retirement Research Center Research Paper No. WP*, 157.
- Lusardi, A. and Mitchell, O. S. (2011). Financial literacy and planning: Implications for retirement wellbeing. Technical report, National Bureau of Economic Research.
- Lusardi, A. and Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature*, 52(1):5–44.
- Lusardi, A., Mitchell, O. S., and Oggero, N. (2020). Debt and financial vulnerability on the verge of retirement. *Journal of Money, Credit and Banking*, 52(5):1005–1034.
- Madrian, B. C. and Shea, D. F. (2001). The power of suggestion: Inertia in 401 (k) participation and savings behavior. *The Quarterly Journal of Economics*, 116(4):1149–1187.
- Mastrobuoni, G. (2011). The role of information for retirement behavior: Evidence based on the stepwise introduction of the social security statement. *Journal of Public Economics*, 95(7-8):913–925.
- Mesa-Lago, C. and Valero, D. (2020). The new wave of pension reforms in Latin America. In *Economic Challenges of Pension Systems*, pages 255–274. Springer.
- Mitchell, O. S. (2018). Enhancing risk management for an aging world. *The Geneva Risk and Insurance Review*, 43(2):115–136.
- Mitchell, O. S. (2020). Building better retirement systems in the wake of the global pandemic. Technical report, National Bureau of Economic Research.
- Moore, D. L. (2003). *Survey of financial literacy in Washington State: Knowledge, behavior, attitudes, and experiences*. Washington State Department of Financial Institutions.
- OECD (2013a). *Pensions at a Glance 2013*. OECD Publishing.
- OECD (2013b). Recent pension reforms and their distributional impact. In *Pensions at a Glance 2013: OECD and G20 Indicators*, pages 17–58. OECD Publishing, Paris.
- OECD (2019). *Pensions at a Glance 2013: OECD Social Indicators*. OECD Publishing, Paris.

- Rupert, P. and Zanella, G. (2018). Grandchildren and their grandparents' labor supply. *Journal of Public Economics*, 159:89–103.
- Sane, R. et al. (2017). Stock market participation in the aftermath of an accounting scandal. Technical report, Indira Gandhi Institute of Development Research, Mumbai, India.
- Skolverket (2000). Child care in Sweden.
- Stango, V. and Zinman, J. (2008). The price is not right (not even on average): Exponential growth bias, present-biased perceptions and household finance. Technical report, Working Paper, Dartmouth College.
- Sundén, A. (2006). The Swedish experience with pension reform. *Oxford Review of Economic Policy*, 22(1):133–148.
- Thaler, R. H. (2018). From cashews to nudges: the evolution of behavioral economics. *American Economic Review*, 108(6):1265–87.
- Thaler, R. H. and Benartzi, S. (2004). Save more tomorrow™: Using behavioral economics to increase employee saving. *Journal of political Economy*, 112(S1):S164–S187.
- United Nations, D. o. E. and Social Affairs, P. D. (2015). World population ageing 2015 (st/esa/ser.a/390). Technical report, United Nations.
- Van Rooij, M., Lusardi, A., and Alessie, R. (2011). Financial literacy and stock market participation. *Journal of Financial Economics*, 101(2):449–472.
- Van Rooij, M. C., Kool, C. J., and Prast, H. M. (2007). Risk-return preferences in the pension domain: are people able to choose? *Journal of Public Economics*, 91(3-4):701–722.
- Van Rooij, M. C., Lusardi, A., and Alessie, R. J. (2012). Financial literacy, retirement planning and household wealth. *The Economic Journal*, 122(560):449–478.
- Wei, L., Peng, M., and Wu, W. (2021). Financial literacy and fraud detection—evidence from China. *International Review of Economics & Finance*, 76:478–494.
- Yu, L., Mottola, G., Bennett, D. A., and Boyle, P. A. (2021). Adverse impacts of declining financial and health literacy in old age. *The American Journal of Geriatric Psychiatry*, 29(11):1129–1139.
- Zanella, G. (2017). How does grandparent childcare affect labor supply? *IZA World of Labor*.

# Pensions, Retirement Behaviour and Financial Fraud Victimisation

This thesis consists of four articles that explore pension investments and retirement behaviour.

The first article investigates how pension communication affects the trading behaviour among pension savers. By using geographical variation in the timing of the distribution of information letters sent from the Swedish Pension Agency to savers, I show that pension information statistically significantly affects investors' trading activity. Still, the letters' economic relevance is limited due to low general engagement among the savers—however, those who respond to the letters by reallocating their portfolios benefit by having better portfolio performance and lower fees in the upcoming years.

The second paper (co-authored with Johannes Hagen) studies exposure and reaction to financial fraud in one of the largest Swedish pension scandals, the Allra case. The third paper (co-authored with Johannes Hagen and Paul Nystedt) analyses the relationship between intelligence and fraud victimisation among investors in the six companies who have been thrown out of the Swedish Premium Pension System by the authorities for not acting in their clients' best interest. The results of these two articles show that while individuals who end up in the fraudulent companies are not socioeconomically different from others, they are more likely to work with financial advisers, some of which steered them into these funds. More intelligent people are less inclined to invest in fund firms that turn out to be fraudulent, and if they do, they are more likely to divest from them after, but not before, the fraud has been revealed.

Finally, the last paper addresses how grandparenthood shapes the labour supply for people who are close to retirement and its effect on the mobility of households. The results show a significant increase in the retirement of similar magnitude for both grandmothers and grandfathers when their first grandchild is born. Moreover, people who have a child become significantly more likely to move closer to their parents (i.e., the child's grandparents).



AMEDEUS MALISA is a PhD Candidate in Economics at Jönköping International Business School. His main research interest is behavioural household finance with special considerations on pensions and retirement. His research has so far been published in the *Review of Behavioral Finance*