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Mind the double jeopardy

Institutional mistrust and minority status relate to both lower saving and early withdrawal of pension funds

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Academic paper

Mind the double jeopardy: institutional mistrust and minority status relate to both lower saving and early withdrawal of pension funds[1]

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Abstract

Both insufficient saving and early withdrawal of retirement funds jeopardize financial well-being in old age, but the latter is rarely studied. We studied whether and which individual differences relate to both regular saving and early withdrawal decisions. These decisions are economically similar (accumulating retirement assets) but psychologically different (regular small losses vs one-off large gain). We analyzed a unique dataset from three representative surveys (n-s ranging from 921 to 1,278) conducted in Estonia in 2020, 2021, and 2022, surrounding a policy reform that introduced an early withdrawal option to a previously mandatory pension saving scheme. Limited trust in financial institutions and ethnic minority status emerged as statistically and economically significant factors explaining variance in decisions not to save and withdraw early. Fostering institutional trust represents a key strategic goal for pension systems. Our findings also call for caution with pension freedom reforms, as they might put those who already save too little in double jeopardy.

Keywords: retirement savings; early withdrawal; individual differences; personality traits

JEL classification: D91; G51; G52; G53

[1] **Data Availability:** The data used in this study are proprietary and were provided by Kantar under a confidentiality agreement. As such, the data cannot be publicly shared. Researchers interested in access may contact Kantar directly, subject to the company's data sharing policies.

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1. Introduction

To achieve a financially secure retirement, people not only need to save adequately throughout their working lives but also need to avoid withdrawing their savings prematurely. Both behaviors can be influenced by macroeconomic trends (OECD, 2024; Fuentes et al., 2025) as well as pension schemes and policies (e.g., auto-enrolment, tax incentives, options for hardship withdrawals, and withdrawal penalties (Benartzi & Thaler, 2007; Beshears et al., 2015)). Beyond such contextual factors, various characteristics of individuals — the focus of our study — also play a significant role. Whereas the relations of individual demographic and personality characteristics with saving behavior are relatively well researched (see for an overview Gerhard et al., 2018), their associations with early withdrawal behavior remain largely unexplored.

The decisions to save for retirement and to withdraw savings early may be influenced by the same as well as by different factors. On the one hand, both saving and withdrawal are related to building up future retirement assets, so one could expect withdrawal to be influenced by some of the same factors as savings. On the other hand, saving decisions involve trading small present losses for potential future gains whereas withdrawal decisions involve trading large present gains for potential future losses, suggesting that each decision may also be sensitive to a unique set of factors.

Saving behavior has been found to be related to a variety of individual characteristics. For example, higher saving rates are associated with socio-economic attributes such as higher income (Dynan, Skinner, & Zeldes, 2004). In addition, higher savings is also related to personality traits such as conscientiousness suggesting that disciplined and organized individuals can withstand temptations for current consumption and generate persistent saving habits (Nyhus, 2017).

Much less is known about the correlates of early withdrawals, potentially due to their episodic nature and lack of data. The limited existing research suggests that early withdrawals are used as a buffer against urgent financial needs (Bateman et al., 2023; Wang-Ly & Newell, 2022; Agarwal et al., 2020; Argento et al., 2014; Amromin & Smith, 2003) and are less common among people with higher general financial literacy (Tharayil & Walstad, 2021). We expect that just like regular saving, early withdrawal is not merely an economic decision, but psychological factors will play a role as well.

It is crucial to look for possible overlap of factors influencing both saving and early withdrawal decisions, as some groups of individuals could be in double jeopardy of risking building up too little retirement assets. Factors that concurrently intensify both behaviors will have a significantly greater impact. Thus, identifying these 'double jeopardy' factors is essential for developing targeted and effective interventions.

To this end, we examined socio-demographic and psychological individual characteristics in relation to regular saving and early withdrawal decisions, utilizing three representative household surveys from Estonia. The samples were collected before and after a 2021 reform that introduced the option to withdraw pension assets early (and completely), providing a unique quasi-natural experiment in an institutional and economic setting where individual retirement saving was highly relevant. According to the OECD, the pension savings of Estonians provide, on average, only 35% of their pre-retirement income, far behind the OECD average of 61% (OECD, 2023).

More specifically, Estonia's pension system comprises three pillars. The first pillar is the pay-as-you-go state pension, where the current pensions are paid from current tax revenues. The second and third pillars consist of tax-favored, funded, individual accounts. The second and third pillar both have the same tax benefit, as individuals do not have to pay income tax (mostly flat rate of around 20%) on the saved amount. Prior to the reform, participation in the second pillar was obligatory, that is, contributions were made based on all taxable income for individuals born after 1984, while the third pillar remained optional. With the reform introduced in 2021, participation in the second pillar became voluntary, and for the first time, withdrawals of entire account balances were permitted. At this stage, approximately 700,000 individuals had accumulated a total of €4 billion in the second pillar. Over 25% of these individuals chose to withdraw funds in the first year after the reform and by 2024, the withdrawal has reached 36% (Pension Registry, Nasdaq, 2024). People withdrawing their savings accept significant disincentives, including a 20% income tax on their savings and a 10-year waiting period to rejoin the second pillar.

First, our results identify a set of 'double jeopardy' factors associated with both saving and early withdrawal decisions. Notably, lack of trust in financial institutions was the strongest predictor of both not saving for retirement and early withdrawal of funds after the reform, extending earlier findings on savings (Goedkoop et al., 2023; Ricci & Caratelli, 2017) to withdrawal decision.

Moreover, non-Estonian nationality (typically Russian) was consistently associated with a lower likelihood of saving and a higher likelihood of early withdrawal.

Second, we find that withdrawal decisions cannot be explained primarily by economic motivations such as liquidity constraints, which were the main explanation highlighted in earlier research using data that did not include psychological factors (Bateman et al., 2023; Wang-Ly & Newell, 2022; Agarwal et al., 2020; Argento et al., 2014; Fuentes et al., 2025). Third, in line with previous findings (e.g., Donnelly et al., 2012), conscientiousness was a significant predictor of saving but not of early withdrawal decisions, suggesting psychological differences between these decisions.

A deeper understanding of individual predictors of saving and early withdrawal decisions is important not only from an academic perspective, but also for public policy. For example, recent findings from Chile indicate that a quarter of national retirement assets were withdrawn early during the Covid pandemic, resulting in over 4 million individuals depleting their entire accounts (Fuentes et al., 2025). Evidence from Australia, which allowed early withdrawals during Covid as well, indicates that total future pension payments will be reduced by 51 billion Euros, amounting to 56,000 € per person that withdrew (Chong, 2024) or 2% of GDP (Hamilton et al., 2024). In the UK, a total of more than £83.6 billion has been withdrawn flexibly from pensions since the pension freedom reform in 2015 (HM Revenue & Customs, 2024). Recent analysis also reveals that early withdrawal from 401(k) accounts in the US has reduced the previously reported success of auto-enrollment efforts, with an estimated 42% of 401(k) balances withdrawn upon job separation (Choi et al., 2024). In the long-term, therefore, such withdrawals can considerably decrease financial retirement security.

2. Literature review: Individual differences in retirement saving and withdrawal behavior

2.1. Sociodemographic characteristics

Sociodemographic characteristics such as age, education, income, and job stability have been closely linked to how actively individuals save for retirement (Skinner, 2007; Soman & Cheema, 2011; Metzger, 2017; Yao & Cheng, 2017).

First, individual's proximity to retirement age is an important predictor of saving more (Report on the Economic Well-Being of U.S. Households, 2016). Middle-aged individuals are more likely to engage in retirement planning (Ricci & Caratelli, 2017).

Gender influences can be more nuanced. Prior studies have shown that women tend to have lower retirement savings, often due to career interruptions for childcare and other family responsibilities (Hartmann & English, 2009; Karim et al., 2023). Gender differences in risk preferences between men and women may lead to differences in portfolio allocations that result in wealth inequality (Charness & Gneezy, 2012; Fisher & Yao, 2017).

Education is another key factor, as more educated individuals tend to have better financial literacy and planning skills, leading to higher savings rates (Lusardi & Mitchell, 2007; Farrell & Shoag, 2016; Yao & Cheng, 2017).

Employment status predicts higher saving (Suh, 2022) and relatedly, those with higher income levels and job stability are more likely to voluntarily save and have accumulated substantial retirement savings (Topa, Moriano, & Moreno, 2012; Ricci & Caratelli, 2017; Yao & Cheng, 2017).

Known predictors of early withdrawals from retirement funds are the ease of access and the emergence of urgent financial needs due to, for example, unemployment and unexpected medical bills (Bateman et al., 2023; Wang-Ly & Newell, 2022; Jeszeck et al., 2019; Amromin & Smith, 2003; Argento et al., 2014; Fuentes et al., 2025; Bekbossinova et al., 2022).

2.2. Psychological characteristics

Personality traits have been found to offer further explanations for saving behaviors (Nyhus & Webley, 2001). Conscientiousness has a positive relationship with retirement preparedness, whereas neuroticism has a negative relationship (Donelly et al., 2012). Additionally, a more future-oriented time perspective and identification with one’s future self increase saving (Hershfield et al., 2009, 2011; Earl et al., 2015; Jacobs-Lawson & Hershey, 2005). The link between personality traits and withdrawal decisions has not been studied.

In addition to personality traits that are defined to be independent of situational domains, financial decisions have also been related to more context-dependent psychological traits that are defined to

manifest primarily in the financial domain. These include risk tolerance, financial locus of control, time perspective, trust in financial institutions, and financial literacy.

Risk tolerance is a tendency to accept higher financial risk in the name of higher reward. Lower risk tolerance potentially fosters more prudent financial habits, including increased savings as a financial buffer (Bommier & Grand, 2019). Previous research has shown that self-reported willingness to take risks serves as a strong predictor of financial behaviors, including retirement asset allocation (Gürdal et al., 2017).

Locus of control is an individual's tendency to believe that their life events are controlled by themselves rather than by external factors (Jacobs-Lawson & Hershey, 2005). Individuals with an internal locus of control, who believe they have control over their financial outcomes, may be more proactive in planning for retirement and taking steps to save and invest appropriately (Cobb-Clark et al., 2016; Bucciol & Trucchi, 2021). Also, longer saving horizons are associated with a higher likelihood of saving, highlighting the importance of time perspective in financial decision-making (Fisher & Montalto, 2010).

Trust reflects an individual's belief in the reliability and integrity of others, such as people in general or specific institutions in particular (Hansen, 2012; Cobb-Clark et al., 2016). Trust in institutions is a joint function of the trustworthiness of institutions as well as personal predisposition towards trust (Van der Cruijsen, de Haan, & Roerink, 2023). Trust plays an important role in retirement savings behavior and financial decisions generally (Jacobs-Lawson & Hershey, 2005, Guiso, Sapienza, & Zingales, 2008; Georgarakos & Pasini, 2011; van der Cruijsen et al., 2023). There is a positive effect of trust in financial institutions on additional supplementary pension savings (Goedkoop et al., 2023).

Financial literacy refers to the level of knowledge and understanding of financial concepts. Higher financial literacy has been linked to saving more for retirement (Van Rooij, Lusardi, & Alessie, 2011; Maule & Maule, 2016; Dewi et al., 2020) as well as to lower likelihood of early withdrawal (Tharayil & Walstad, 2021). However, overconfidence in financial knowledge makes hardship withdrawals more likely (Lee, 2020), potentially owing to underestimating the long-term ramifications of early withdrawals (Lee & Hanna, 2020). Recent studies that measured domain-specific knowledge about pensions and pension systems have shown that higher knowledge in this

domain is related to more preparatory behaviors (Elinder at al., 2022) such as utilizing financial saving incentives (Chan & Stevens, 2008), saving more (Landerretche and Marinez, 2013), and making more active and conscious decisions (Debets et al., 2022). Regarding early withdrawals, Loibl et al., (2019) found that those who withdrew early in the UK had better pension literacy, that is they seem to have understood, for example, the unfavorable tax implications of their decision.

3. Data

Our data include responses from three representative household surveys conducted in August 2020, before the reform, and in May 2021 and May 2022, following the reform. These datasets incorporate information on savings and withdrawal decisions, socio-demographic variables, and psychological individual differences. Respondents in all three surveys were recruited through Kantar Estonia, a professional market research company, using their representative panel (August 2020, n=921; May 2021, n=1,072; May 2022, n=1,278). Participants had provided consent to receive survey invitations. Kantar panel members are incentivized through monthly and quarterly voucher raffles.

The surveys were designed by Kantar Estonia for different commercial clients who were, among other questions, interested in assessing the expected and actual nationwide impact of the pension reform. For that reason, while the three surveys include an identical set of socio-demographic characteristics, other variables are available in only two or one dataset (and in a few cases the measurements are similar but not identical). Table 1 shows question phrasings and descriptive statistics for all variables analyzed in this study.

The first of our dependent variables Withdraw (1=withdraw, 0=otherwise) is included in all three datasets (intent for 2020, reported behavior for 2021 and 2022). Saving decisions were measured only in 2022 using a variable that captures not saving for retirement (1=not saving, 0=otherwise).

Table 1. Definitions of variables and descriptive statistics

Variable	Definition	2020		2021		2022	
		Mean	SD	Mean	SD	Mean	SD
Withdrawal	Dummy variable; 1 if respondent intended to leave Pillar 2 (2020 wave), intended to leave or already submitted a leave request (2021 wave), had left Pillar 2 (2022 wave); 0 otherwise	0.13	0.34	0.26	0.44	0.18	0.39
Not saving	Dummy variable; 1 if respondent did not save for retirement; 0 otherwise	n/a	n/a	n/a	n/a	0.09	0.29
Age 20-24	Dummy variable; 1 if respondent's age was between 20 to 24 years; 0 otherwise	0.11	0.31	0.11	0.31	0.11	0.32
Age 25-34	Dummy variable; 1 if respondent's age was between 25 to 34 years; 0 otherwise	0.22	0.41	0.25	0.43	0.23	0.42
Age 35-49	Dummy variable; 1 if respondent's age was between 35 to 49 years; 0 otherwise	0.33	0.47	0.33	0.47	0.39	0.49
Age 50-65	Dummy variable; 1 if respondent's age was between 50 to 65 years; 0 otherwise	0.34	0.48	0.31	0.46	0.27	0.45
Non-Estonian vs Estonian	Dummy variable; 1 if respondent’s nationality is not Estonian; 0 otherwise	0.23	0.42	0.32	0.47	0.32	0.47
Education: high vs low	Dummy variable; 1 if respondent's education level is university degree or higher; 0 otherwise	0.55	0.50	0.54	0.50	0.35	0.48
Female vs Male	Dummy variable; 1 if respondent's gender is female; 0 otherwise	0.54	0.50	0.52	0.50	0.54	0.50
Income: low	Dummy variable; 1 if respondent's family monthly income is below 600 €; 0 otherwise	0.23	0.42	0.26	0.44	0.18	0.38
Income: middle	Dummy variable; 1 if respondent's family monthly income is between 600 € and 1,199 €; 0 otherwise	0.33	0.47	0.40	0.49	0.32	0.47
Income: high	Dummy variable; 1 if respondent's family monthly income is 1,200 € or larger; 0 otherwise	0.32	0.47	0.33	0.47	0.25	0.44
Income: refused to disclose vs middle	Dummy variable; 1 if respondent refused to indicate the family's monthly income; 0 otherwise	0.12	0.32	0.01	0.10	0.24	0.43
Employed	Dummy variable; 1 if respondent is working for pay; 0 otherwise	0.69	0.47	0.71	0.45	0.69	0.46
Self-employed	Dummy variable; 1 if respondent is self-employed; 0 otherwise	0.08	0.28	0.08	0.28	0.10	0.30
Children	Dummy variable; 1 if respondent has children under the age of 16; 0 otherwise	0.36	0.48	0.35	0.48	0.40	0.49

Locus of Control	Internal locus of control; response to the statement "If you set realistic goals, you can succeed no matter what" (1=not true ... 4=absolutely true) (2020 wave); average of the responses to the three questions "I can pretty much determine what happens in my life", "My financial situation is largely out of my control" (reverse coded), "When I make financial plans, I do everything in my power to achieve them" (1=do not agree at all ... 5=fully agree) (2022 wave)	3.03	0.76	n/a	n/a	3.66	0.74
Big5: Openness	Big Five personality trait Openness to experience, scale 0-2. Response to “curious” + “bursting with ideas”	0.75	0.73	n/a	n/a	0.10	0.30
Big5: Conscientiousness	Big Five personality trait Conscientiousness, scale 0-2. Response to “planner” + systematic”	0.91	0.82	n/a	n/a	0.80	0.66
Big5: Introversion	Big Five personality trait Extraversion/Introversion, scale 0-2. Response to “quiet” + “reserved”	1.51	0.72	n/a	n/a	1.36	0.61
Big5: Agreeableness	Big Five personality trait Agreeableness, scale 0-2. Response to “helpful” + “prepared to compromise”	1.19	0.80	n/a	n/a	0.40	0.53
Big5: Emotional Stability	Big Five personality trait Neuroticism/Emotional stability, scale 0-2. Response to “relaxed” + “carefree”	0.31	0.58	n/a	n/a	0.15	0.41
Impulsivity	Response to the statement "I do things impulsively" (1=not true ... 4=absolutely true)	2.05	0.76	n/a	n/a	n/a	n/a
Time perspective	Time perspective present hedonistic; response to the statement "I find myself getting swept up in the excitement of the moment" (1=not true ... 4=absolutely true)	2.98	0.81	n/a	n/a	n/a	n/a
Risk tolerance: low	Dummy variable; 1 if response to "I will take a greater risk for a greater potential payoff" is "Strongly disagree" or "Disagree” (2020 wave); 1 if response to "Imagine you inherited 8,000 € and decided to invest it. What amount would you expect to see in a year?" is "between 7,600 to 8,800 €" (2022 wave); 0 otherwise	0.25	0.43	n/a	n/a	0.37	0.48
Risk tolerance: medium	Dummy variable; 1 if response to "I will take a greater risk for a greater potential payoff" is "Neither agree nor disagree" or "Agree" (2020 wave); 1 if response to "Imagine you inherited 8,000 € and decided to invest it. What amount would you expect to see in a year?" is "between 6,800 to 10,400 €" (2022 wave); 0 otherwise	0.68	0.47	n/a	n/a	0.49	0.50
Risk tolerance: high	Dummy variable; 1 if response to "I will take a greater risk for a greater potential payoff" with "Strongly agree" (2020 wave); 1 if response to "Imagine you inherited 8,000 € and decided to invest it. What amount would you expect to see in a year?" is "between 4,400 to 15,200 €" (2022 wave); 0 otherwise.	0.07	0.25	n/a	n/a	0.15	0.35

Trust in financial institutions	Trust in financial institutions; response to the statement "How much do you trust pension funds?" (1=not at all ... 5=completely) (2021 wave); average of the responses to the three questions "How much do you trust banks", "How much do you trust the central bank", "How much do you trust other financial institutions (e.g., Tax and Customs Board, Pension Centre, Financial Supervision Authority)" (1=not at all ... 5=completely) (2022 wave)	n/a	n/a	3.10	1.15	3.70	0.75
Pillar 2 knowledge	Sum of the correct answers to seven knowledge questions about Pillar 2. Questions are: "Pension Pillar 2 units are inheritable" (true); "When leaving pension Pillar 2, you can rejoin it only after 10 years" (true); "2% of the monthly salary goes to Pillar 2, to which the state adds another 4%" (true); "It is possible to make more contributions to pension Pillar 2 yourself" (false); "If you leave pension Pillar 2 earlier, you have to pay 20% income tax on the paid-out amount" (true); "Contributions to pension Pillar 2 can be stopped at any time and resumed at any time" (false); "The amount added by the state to pension Pillar 2 depends on the number of children" (false)	n/a	n/a	5.19	1.59	n/a	n/a
Pillar 2 performance	Response to the statement "How satisfied are you with the performance of your Pillar 2 pension fund?" (1=not satisfied at all ... 5=very pleased)	n/a	n/a	2.86	1.19	n/a	n/a

This table presents variable names, definitions, and descriptive statistics for the three datasets. An entry of “n/a” indicates that this variable is not available for the particular dataset.

In terms of **sociodemographic characteristics,** the surveys contain information on respondents' gender, age, education, income, employment status, having children, and nationality (Estonian and non-Estonian which is typically Russian).

In terms of **psychological factors,** the surveys contain measurements of the Big Five (2020, 2022), locus of control (2020, 2022), impulsivity (2020), time perspective (2020), and risk tolerance (2020, 2022). These variables were measured using short scales mostly developed at Kantar to accommodate the overall survey length.

In 2020, **Big Five personality traits** were measured by having respondents choose adjectives from a pool of 31 adjectives to describe their personality. Using factor analysis, two adjectives were selected to represent each Big Five trait (Lesment & Pulver, 2022). The number of these items that a respondent selected was treated as their score on each trait (range 0 – 2). In 2022, a shorter list of adjectives (based on the previous factor analysis) was used with restrictions on the number of keywords respondents could choose. Hence the mean scores differed between 2020 and 2022 waves.

Impulsivity was measured as a response to the statement "I do things impulsively" (Reynolds et al., 2006). **Time perspective** was measured as a response to the statement "I find myself getting swept up in the excitement of the moment" (Carelli & Olsson, 2015). Both items used a 1-4 scale.

Internal locus of control (2020) was measured as response to the statement "If you set realistic goals, you can succeed no matter what" on a 1-4 scale. **Financial locus of control** (2022) was measured using a validated index (Kempson et al., 2017) computed by averaging the responses to three questions: "I can pretty much determine what happens in my life", "My financial situation is largely out of my control" (reverse coded), "When I make financial plans, I do everything in my power to achieve them."

General **Risk tolerance** (2020) was measured similar to the U.S. Survey of Consumer Finances as response to the statement "I will take a greater risk for a greater potential payoff." on a 1-4 scale. **Financial risk tolerance** (2022) was measured by asking "Imagine you inherited 8,000 € and decided to invest it. What amount would you expect to see in a year?" with response options of "7,600 to 8,800 €", "6,800 to 10,400 €", and "4,400 to 15,200 €".

Trust in financial institutions was measured in 2021 as a response to "How much do you trust pension funds?" and in 2022 as an average of responses to three questions: "How much do you trust banks", "How much do you trust the central bank", "How much do you trust other financial institutions" (Hansen, 2012).

As a proxy for financial literacy, **Pillar 2 knowledge** was measured using a knowledge test (e.g., as in Landerretche and Marinez, 2013 or Elinder, 2022), that is, the number of correct answers to seven knowledge questions about the second pillar was scored (see Table 1 for details). **Pillar 2 perceived performance** was measured based on how satisfied respondents were with the performance of their second pillar pension investments.

4. Results

To identify factors related to saving and withdrawal decisions, we conducted separate logistic regressions predicting the binary outcomes of 1) not saving (vs saving) for retirement, and 2) early withdrawing (vs not withdrawing) of retirement savings. We used a block-wise approach, sequentially including sets of predictors to learn if insignificance of some predictors in models with a larger set of predictors is driven by, for example, multicollinearity. This approach allows us to examine how various socio-demographic and psychological factors are associated with both saving and withdrawal behaviors, providing insights into the double jeopardy of low regular saving and early withdrawal of retirement funds.

Table 2 shows the logistic regression results for the most comprehensive models, Appendix Table A1 reports models with only one block of predictors (e.g., only demographics).

Table 2. Predicting the decision to save or withdraw early

	(1) Withdraw 2020	(2) Withdraw 2021	(3) Withdraw 2022	(4) Not saving 2022
Age 20-24 vs 35-49	0.243*	0.412*	0.271**	1.365
	(0.015)	(0.020)	(0.001)	(0.379)
Age 25-34 vs 35-49	1.114	1.202	1.217	0.296**
	(0.725)	(0.418)	(0.328)	(0.005)
Age 50-65 vs 35-49	1.230	0.712	0.758	1.109
	(0.433)	(0.115)	(0.176)	(0.695)
Non-Estonian vs Estonian	2.213***	1.948***	1.579**	1.831**
	(0.000)	(0.000)	(0.007)	(0.008)
Education: high vs low	0.544**	0.448***	0.606**	0.673
	(0.005)	(0.000)	(0.005)	(0.110)
Female vs Male	1.159	1.370	1.297	1.121
	(0.501)	(0.070)	(0.112)	(0.609)
Income: refused to disclose vs middle	0.708	0.696	0.790	2.364**
	(0.355)	(0.655)	(0.249)	(0.001)
Income: low vs middle	1.167	0.716	0.890	1.362
	(0.564)	(0.108)	(0.602)	(0.327)
Income: high vs middle	0.869	0.928	0.691	0.597
	(0.603)	(0.727)	(0.099)	(0.189)
Employed vs unemployed	0.692	0.839	1.036	0.548*
	(0.145)	(0.423)	(0.869)	(0.021)
Self-employed	0.678	0.638	1.014	0.505
	(0.368)	(0.186)	(0.965)	(0.103)
Children vs no children	0.665	1.197	1.549**	0.859
	(0.098)	(0.351)	(0.009)	(0.527)
Locus of Control: internal vs external	0.751*		0.981	0.962
	(0.041)		(0.862)	(0.788)
Big5: Openness	0.951		1.171	1.730
	(0.752)		(0.525)	(0.081)
Big5: Conscientiousness	0.974		1.184	0.668*
	(0.847)		(0.161)	(0.014)
Big5: Introversion	1.300		1.070	1.125
	(0.095)		(0.602)	(0.508)
Big5: Agreeableness	0.913		1.014	0.900
	(0.494)		(0.928)	(0.604)
Big5: Emotional Stability (reversed Neuroticism)	0.830		1.097	1.306
	(0.349)		(0.634)	(0.313)
Impulsivity	1.043			

	(0.778)			
Time perspective	0.863			
	(0.284)			
Risk tolerance: medium vs low	0.997		1.038	0.689
	(0.991)		(0.832)	(0.102)
Risk tolerance: high vs low	0.901		1.323	0.578
	(0.850)		(0.212)	(0.088)
Trust in financial institutions		0.427***	0.567***	0.600***
		(0.000)	(0.000)	(0.000)
Pillar 2 knowledge		1.161**		
		(0.008)		
Pillar 2 performance		0.744***		
		(0.000)		
Constant	0.647	5.305***	1.203	1.082
	(0.534)	(0.000)	(0.751)	(0.919)
Pseudo R2	0.090	0.238	0.095	0.137
Observations	921	1,072	1,278	1,278

*Notes: This table shows the results of a logistic regression of the decision to withdraw early (columns 1-3) and not to save (column 4) on the largest set of predictor variables. Reported are odds ratios (p-values in parentheses). All variables are defined in Table 1. *** indicates significance at the 0.1% level, ** indicates significance at the 1% level, and * indicates significance at the 5% level.*

Sociodemographic Characteristics

The analyses revealed significant age-related patterns in withdrawal behavior. Compared to the reference group (35-49 years), young adults aged 20-24 demonstrated significantly lower withdrawal propensity, with odds ratios ranging from 0.243 to 0.412 across waves, indicating a 75.7% to 58.8% lower likelihood of withdrawal. The presence of children proved significant only in the 2022 wave, where parents showed increased odds of withdrawal (OR = 1.549, p = 0.009).

Ethnicity emerged as a consistent predictor: non-Estonian nationals exhibited significantly higher odds of both withdrawal (OR = 1.579-2.213) and not saving (OR = 1.831, $p < 0.001$). Educational attainment showed a protective effect, with higher education associated with reduced withdrawal probability (OR = 0.448-0.606) as well as higher probability of saving (OR = 0.448-0.606).

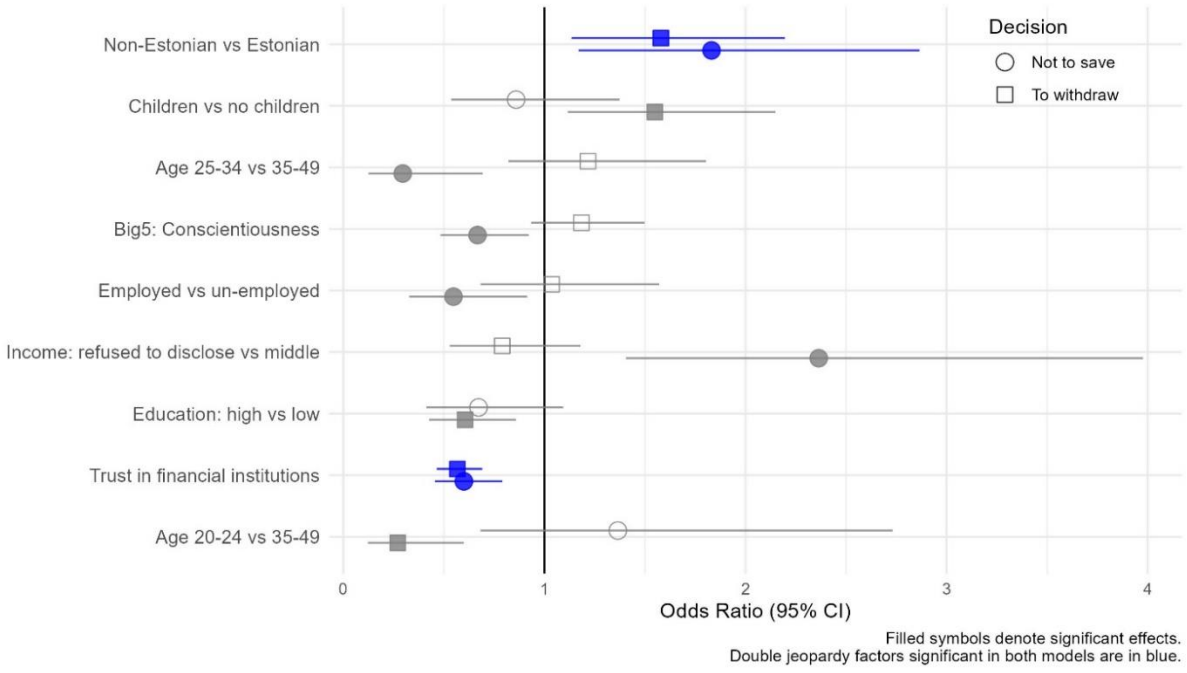
Psychological Factors

Several psychological characteristics showed significant associations with withdrawal and saving behaviors. Internal locus of control, measured in the 2020 wave, demonstrated a protective effect against withdrawal (OR = 0.751, p = 0.041). Among the Big Five personality traits, conscientiousness appeared as a significant predictor of saving behavior (OR = 0.668, p = 0.014), indicating that more conscientious individuals were more likely to maintain regular savings habits.

Higher knowledge of the system's rules predicted higher likelihood of withdrawal (OR = 1.161, p = 0.008). Trust in financial institutions stood out as the most robust psychological predictor, significantly affecting both saving patterns and withdrawal decisions. Higher trust was consistently associated with lower withdrawal probability (OR = 0.427-0.567) and higher likelihood of regular saving (OR = 0.600, p < 0.001).

In summary, the key factors associated with both not saving and early withdrawal were low institutional trust, lower educational attainment, and non-Estonian nationality. Figure 1 plots the odds ratios for the significant factors for the 2022 data (all factors are plotted in the Appendix in Figure A1). Overall, our findings suggest that both behavioral outcomes may share common underlying determinants.

Figure 1. Odds ratios for significant factors in the 2022 regression models



5. Summary and Discussion

We investigated which individual factors relate to what we call the 'double jeopardy' of retirement savings, where low regular saving and early withdrawal of retirement funds both jeopardize financial well-being in old age. Understanding these behaviors is essential for formulating policies and interventions that can mitigate retirement security risks. We rely on nationally representative data from three independent surveys taken around the time of a widely discussed pension reform in Estonia which increased the personal relevance of the survey questions for respondents.

The decisions to save and to withdraw savings are similar in their implications for future retirement income but different in their psychological and economic structure. Saving small amounts regularly can be seen as routine behavior with minimal short-term costs. Withdrawing a significant sum, equivalent to monthly or annual salary levels, involves more substantial opportunity costs and alternative uses for the funds. Consequently, the decision to save regularly might be less likely to involve deliberation compared to the more consequential decision to withdraw funds. Some of our findings illustrate the differences between the decisions to save and to withdraw by identifying several factors associated with one but not the other decision.

However, there were 'double jeopardy' factors that were associated with both decisions. Across different survey waves, a consistent pattern emerged: lack of trust in financial institutions was the pivotal factor, predicting both the likelihood of not saving and early withdrawal of funds statistically and economically significantly. This finding contributes to the growing body of findings linking trust with retirement savings behavior (Goedkoop et al., 2023; Ricci & Caratelli, 2017). Our findings extend this research by indicating that trust plays a similarly important role for withdrawal decisions. The general trust in institutions, and in pensions funds specifically, is near the European average in Estonia (World Values Survey, 2022; Eurobarometer, 2024), suggesting that the present finding may generalize to many other countries as well. The measure of trust does not only reflect the credibility of institutions but also individual differences in skepticism towards institutions. We found that those who do not trust financial institutions also do not trust other institutions such as the media, the state, and politicians (see Appendix Table A2). Trust as the key factor influencing both not saving and early withdrawal highlights the importance of confidence in financial institutions in shaping personal financial behavior.

Another characteristic that may place an individual to the double jeopardy of low saving and high withdrawal was nationality. Non-Estonian nationality (typically Russian) was consistently associated with a lower likelihood of saving and a higher probability of early withdrawal. Note that this relationship held even when controlling for other sociodemographic characteristics. This highlights a vulnerability among this minority group which may stem from exposure to different media narratives. For instance, the Russian-speaking minority tends to believe that retirement inevitably means living in poverty (Pulk et al, 2024). Our findings on the vulnerability of minority groups echo those of Topa et al. (2012), who found that migration seniority predicted lower expected pensions among immigrants in Europe. These findings suggest that minority status may create consistent patterns of disadvantage in retirement preparation across different contexts. A recent analysis based on a systematic literature review describes this "migrant pension penalty" as a combination of multiple factors, including institutional and economic constraints, language skills, cultural norms, and connections with others such as families and neighbors (Veldman et al, 2025).

In addition to these two overlapping factors, other factors were only related to one of the two decisions. Lower educational attainment was linked to a higher probability of withdrawing funds early. While higher income was correlated with regular saving, it was not a significant predictor of early withdrawal decisions. This suggests that economic hardship may not be the primary driver of early withdrawals in this context, potentially due to the fact that Estonia has unemployment insurance and universal health care.

People with children were also more likely to withdraw. As we control for income and age in the model, this might reflect higher consumption needs in the present. Additionally, people with children might count on their support in old age. This narrative has been popularized by some politicians in the Estonian media, “children as pension pillars.”

Conscientiousness was a significant predictor of regular saving, aligning with previous research that links this trait with disciplined and organized financial behavior. However, none of the Big Five personality traits were a significant predictor of early withdrawal decisions. This finding illustrates the differences between saving and withdrawal decisions as only the relatively regular behavior of saving for retirement was associated with a trait that manifests in persistence and dutifulness.

Also, our analysis shows that lack of knowledge is not the reason for early withdrawal, as respondents know withdrawing comes with a tax burden (essentially a high fee of 20%, meaning outperforming the second pillar withdrawal with alternative investments would therefore not be economically feasible). In fact, we find that greater knowledge was positively correlated with withdrawal. Interestingly, the literature has so far documented a strong and positive relationship between higher pension knowledge and better financial retirement decision-making (Elinder at al., 2022; Chan & Stevens, 2008; Landerretche and Marinez, 2013; Debets et al., 2022). Thus, a plausible interpretation of our findings could be reverse causality – those who decided to keep saving, did not need to know all the terms and implications of withdrawal, mimicking similar findings from the UK (Loibl et al., 2019).

A key insight from our findings is that saving and withdrawal decisions cannot be fully explained by purely economic motivations such as liquidity constraints highlighted by previous early withdrawal research (Bateman et al., 2023; Wang-Ly & Newell, 2022; Agarwal et al., 2020; Argento et al., 2014; Fuentes et al., 2025). These results align with prior research showing that behavioral factors play crucial roles in retirement decision-making and that individual differences interact with contextual factors to influence retirement outcomes (Reyers et al, 2015).

Importantly, while we see some differences between factors relating to regular saving and early withdrawal, there is an important overlap between factors influencing both decisions. This creates a risk for the future, as some people are in what we call 'double jeopardy' – they save less, and when given a chance, withdraw early. The risk is further increased if the withdrawn funds go to immediate consumption rather than investments. In Australia, spending increased in the 8-week period after the reform allowing withdrawals, with gambling the largest spending category (Hamilton et al., 2023). Through official statistics about how exactly the withdrawn second pillar was used in Estonia, there is indirect evidence. In September 2021, the month the funds were transferred, retail sales reached all time high of 790 million euros, compared to 640 million the year before (Estonian Statistics Bureau, 2021) There is also anecdotical evidence such as stories of flatscreen TV sets large enough to not fit into taxis servicing people on shopping sprees (Rajamäe, 2021).

Our findings can inform policy design to support better financial retirement outcomes. First, it seems evident that policies solely focused on providing tax benefits or penalties are insufficient to

provide enough incentives to save for retirement. Second, additional efforts should be also directed towards rebuilding trust in financial institutions. Third, interventions should be tailored to address the specific needs of vulnerable groups, such as minorities and the self-employed. Fourth, policies should consider the heterogeneity of the population, ensuring that financial education and retirement planning programs are relevant to various socio-demographic segments. Finally, our study demonstrates that self-reported data can provide information about the heterogeneity and impact ahead of reforms. For instance, the reported intentions of withdrawal measured in the present study were remarkably predictive of actual withdrawal rates in the first wave of (Kantar Emor, 2020; Nasdaq).

More generally, our results point at the need for policymakers to consider adopting a comprehensive approach to retirement savings interventions and policies. First, both regular savings and withdrawal behaviors should be jointly evaluated. Second, a reasonable balance between individual responsibility for retirement savings and mandatory system components should be considered, aligning with the i-frame and s-frame perspectives proposed by Chater and Loewenstein (2022). That is, policymakers should evaluate if setting tax (dis)incentives or for individual voluntary saving and early withdrawal decisions is sufficient (i-frame) or more fundamental systemic setting changes are needed (s-frame) such as requiring more mandatory pension contributions, as well as restricting early withdrawals.

Our findings, alongside evidence from the UK, the US, Australia, and Chile, also demonstrate that allowing early withdrawal can create a considerable temptation to access these funds prematurely. This phenomenon, combined with the well-documented challenges of regular saving, poses double jeopardy for long-term retirement security. Contributing to existing evidence, we find that early withdrawal is not explained merely by economic needs but trust and other factors.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work the authors occasionally used Claude, ChatGPT, and Wordtune to improve readability and language of the work. After using these tools, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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Appendix

Table A1. Predicting the decision to save or withdraw early – different sets of predictors

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	With-draw 2020	With-draw 2020	With-draw 2020	With-draw 2021	With-draw 2021	With-draw 2021	With-draw 2022	With-draw 2022	With-draw 2022	No Save 2022	No Save 2022	No Save 2022
Age 20-24 vs 35-49	0.202**		0.243*	0.207**		0.412*	0.237**		0.271**	1.164		1.365
	(0.005)		(0.015)	(0.000)		(0.020)	(0.000)		(0.001)	(0.659)		(0.379)
Age 25-34 vs 35-49	0.958		1.114	0.788		1.202	1.223		1.217	0.312**		0.296**
	(0.885)		(0.725)	(0.222)		(0.418)	(0.300)		(0.328)	(0.006)		(0.005)
Age 50-65 vs 35-49	1.290		1.230	0.670*		0.712	0.735		0.758	1.108		1.109
	(0.318)		(0.433)	(0.037)		(0.115)	(0.123)		(0.176)	(0.687)		(0.695)
Non-Estonian vs Estonian	2.288***		2.213***	1.928***		1.948***	1.711***		1.579**	2.088***		1.831**
	(0.000)		(0.000)	(0.000)		(0.000)	(0.001)		(0.007)	(0.001)		(0.008)
Education: high vs low	0.518**		0.544**	0.445***		0.448***	0.545***		0.606**	0.675		0.673
	(0.002)		(0.005)	(0.000)		(0.000)	(0.000)		(0.005)	(0.104)		(0.110)
Female vs Male	1.223		1.159	1.286		1.370	1.191		1.297	0.912		1.121
	(0.334)		(0.501)	(0.096)		(0.070)	(0.268)		(0.112)	(0.665)		(0.609)
Income: refused to disclose vs middle	0.669		0.708	1.197		0.696	0.855		0.790	2.403***		2.364**
	(0.275)		(0.355)	(0.803)		(0.655)	(0.432)		(0.249)	(0.001)		(0.001)
Income: low vs middle	1.149		1.167	1.024		0.716	0.951		0.890	1.419		1.362
	(0.596)		(0.564)	(0.896)		(0.108)	(0.815)		(0.602)	(0.255)		(0.327)
Income: high vs middle	0.828		0.869	1.017		0.928	0.621*		0.691	0.558		0.597
	(0.474)		(0.603)	(0.931)		(0.727)	(0.030)		(0.099)	(0.132)		(0.189)
Employed vs unemployed	0.671		0.692	0.825		0.839	0.916		1.036	0.527*		0.548*
	(0.109)		(0.145)	(0.332)		(0.423)	(0.671)		(0.869)	(0.012)		(0.021)
Self-employed	0.653		0.678	0.835		0.638	1.061		1.014	0.605		0.505
	(0.314)		(0.368)	(0.562)		(0.186)	(0.843)		(0.965)	(0.211)		(0.103)
Children vs no children	0.678		0.665	1.018		1.197	1.545**		1.549**	0.862		0.859
	(0.108)		(0.098)	(0.916)		(0.351)	(0.007)		(0.009)	(0.524)		(0.527)
Locus of Control: internal vs external		0.665**	0.751*					1.017	0.981		0.897	0.962
		0.002	(0.041)					(0.870)	(0.862)		(0.422)	(0.788)
Big5: Openness		0.871	0.951					1.232	1.171		1.553	1.730
		0.359	(0.752)					(0.376)	(0.525)		(0.133)	(0.081)
Big5: Conscientiousness		0.930	0.974					1.165	1.184		0.686*	0.668*
		0.569	(0.847)					(0.183)	(0.161)		(0.019)	(0.014)
Big5: Introversion		1.384*	1.300					1.071	1.070		1.155	1.125
		0.031	(0.095)					(0.585)	(0.602)		(0.399)	(0.508)
Big5: Agreeableness		0.917	0.913					0.954	1.014		0.838	0.900
		0.494	(0.494)					(0.743)	(0.928)		(0.363)	(0.604)
Big5: Emotional Stability (reversed Neuroticism)		0.871	0.830					1.010	1.097		1.027	1.306
		0.460	(0.349)					(0.957)	(0.634)		(0.914)	(0.313)
Impulsivity		1.065	1.043									
		0.657	(0.778)									

Time perspective		0.849	0.863									
		0.219	(0.284)									
Risk tolerance: medium vs low		0.945	0.997					1.096	1.038		0.662	0.689
		0.802	(0.991)					(0.583)	(0.832)		(0.057)	(0.102)
Risk tolerance: high vs low		0.770	0.901					1.450	1.323		0.605	0.578
		0.616	(0.850)					(0.089)	(0.212)		(0.105)	(0.088)
Trust in financial institutions					0.426***	0.427***		0.523***	0.567***		0.572***	0.600***
					(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)
Pillar 2 knowledge					1.145**	1.161**						
					(0.009)	(0.008)						
Pillar 2 performance					0.783***	0.744***						
					(0.001)	(0.000)						
Constant	0.251***	0.620	0.647	0.549*	3.636***	5.305***	0.236***	1.567	1.203	0.123***	1.496	1.082
	(0.000)	0.408	(0.534)	(0.031)	(0.000)	(0.000)	(0.000)	(0.376)	(0.751)	(0.000)	(0.546)	(0.919)
Pseudo R2	0.073	0.035	0.090	0.068	0.189	0.238	0.063	0.048	0.095	0.100	0.049	0.137
Observations	921	921	921	1,072	1,072	1,072	1,278	1,278	1,278	1,278	1,278	1,278

*Notes: This table shows the results of a logistic regression of the decision to withdraw early (columns 1-9) and not to save (columns 10-12) on different sets of predictor variables. Reported are odds ratios (p-values in parentheses). All variables are defined in Table 1. *** indicates significance at the 0.1% level, ** indicates significance at the 1% level, and * indicates significance at the 5% level.*

Table A2. Pairwise correlations of trust measures (2022 data)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Bank employees	1.00								
(2) Banks in general	0.62***	1.00							
(3) Sales representatives of financial products	0.30***	0.33***	1.00						
(4) Central bank	0.44***	0.48***	0.19***	1.00					
(5) Ministries	0.40***	0.39***	0.19***	0.57***	1.00				
(6) Other financial institutions than banks	0.41***	0.38***	0.15***	0.53***	0.61***	1.00			
(7) Politicians	0.25***	0.24***	0.30***	0.27***	0.49***	0.33***	1.00		
(8) Economic journalists, media representatives	0.21***	0.29***	0.18***	0.34***	0.38***	0.28***	0.39***	1.00	
(9) Family members, friends	0.08**	0.07**	0.15***	0.04	-0.04	0.03	0.04	0.07**	1.00

*** p<0.001, ** p<0.01, * p<0.05

Figure A1. Odds ratios for all factors in the 2022 regression models