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Journal of Policy Modeling 45 (2023) 644–668



www.elsevier.com/locate/jpm

Do young generations save for retirement? Ensuring financial security of Gen Z and Gen Y

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Received 23 October 2022; Received in revised form 8 February 2023; Accepted 25 March 2023

Available online 23 May 2023

Abstract

Concerns about the population aging and global trends to shift more responsibility for future retirement from the state to the individual need policy planning to increase youth's savings for retirement. The study aims to identify behavioral, financial, demographic, and educational determinants of savings for retirement in two groups of young adults with reference to people aged 50–60. The binary logit model and pairwise comparison results showed that the probability of saving for retirement increases with age and responsibility fosters saving behavior among young adults. The observed differences allow the formulation of policy recommendations adapted to the preferences of generations Z and Y.

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Keywords: Behavioral life-cycle; Retirement; Young adults; Savings; Logit model; Micro policy implications

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1. Introduction

Negative rates of population growth, a growing share of the elderly, and a decreasing percentage of young people have been observed in Poland and other European countries (Fraccaroli & Deller, 2015; Pascual-Saez et al., 2020). The share of young people in Poland aged 18–24 fell from 12% of the population in 2003 to 6% in 2020. At the same time, the share of people above the retirement age in Polish society reached 22% and the elderly dependency ratio grew from 22 in 2015 to 28 in 2020 (Statistics Poland, 2021).

The household saving rate in Poland was 3% of gross disposable income, which was the lowest level in the European Union in 2021 (17% in EU-27; Eurostat, 2021). Similarly, Poland's average share of intentional savings for retirement is low and based mostly on a single pension scheme (IZFA, 2019). Therefore, considering that young adults have the longest to contribute to pensions, their financial security during retirement should be given increasing attention. Therefore, they are the target group related to retirement policy which must be created in the long run to ensure both stability and benefits. Youth savings can promote asset-building, instill good financial habits, and improve a country's overall gross savings rate (Kilara & Latortue, 2012). Although positive economic, psychological, social, and inter-generational effects can result from targeted policies encouraging youth to save for retirement, such initiatives are not well recognized.

The article aims to identify young adults' retirement savings patterns, primarily, the driving forces shaping their retirement savings decisions, and to formulate micro-policy recommendations to ensure the financial security of current youth in their old age. In the paper, individual and mostly intentional savings for retirement, related to a long-run perspective, are compared to short-run savings (like savings for a new pair of shoes or traveling). We demonstrate that young people's decisions to save for retirement depend not only on social and financial factors like gender or income but also on behavioral heuristics consistent with the behavioral life-cycle hypothesis (BLCH; Shefrin & Thaler, 1988).

In BLCH self-control is assumed, among others, which needs to deal with postponing a significant portion of consumption until retirement. Trade-offs between immediate gratification and long-run benefits entail conflict that cannot be solved without the psychological cost of resisting temptation represented by willpower (Shefrin & Thaler, 1988). One solution is to restrict future choices by imposing constraints, which as with any precommitment, are referred to as internal rules obeyed by youth to ensure financial security in the future (Laibson, 1997). Moreover, we assume that personal financial responsibility and limited trust in state institutions may favor discretionary retirement savings apart from self-control.

The study is based on the primary dataset collected in December 2020 among young people all over Poland. Poland can serve as an excellent example of Central and Eastern European countries for two reasons; a common path of transition from centrally-planned to market economies and similar demographic, economic, and social conditions. The young adults were divided into two subgroups: 18–24 years old (corresponding to the early Z generation; GenZ) and 25–29 years old (related to the late Y generation; GenY). The validation group of people between 50 and 60 years old allows for comparing the youth saving for retirement decisions with the generation assigned to their parents. Even though the division of the generations is not arbitrary, the proposed categorization describes the GenY as those born in 1980–1995, the GenZ in 1996–2010, and the older generation as those born in 1960–1979, representing partly X and baby boomers generation (Zemke et al., 2000; Dimock, 2019). Overall, 1000 people - selected randomly according to Statistics Poland's population structure were investigated. The paper's methodology is based on the authors' questionnaire directed to respondents. Besides, a binary logit model and pairwise comparison provided an appropriate in-depth analysis tool.

The specified research questions (RQ) refer to RQ1: Are the youth saving for retirement patterns in line with the behavioral life-cycle hypothesis? RQ2: What are the differences between factors determining saving behavior between youth and older generations? RQ3: How much do the young adults' determinants of saving for retirement differ from other saving decisions? RQ4: Do saving patterns identified for young generations allow constructing policy recommendations?

Overall, the contributions of the study are threefold. Firstly, based on the literature review, the BLCH was explained as the theoretical fundament of our study (Shefrin & Thaler, 1988). Secondly, the empirical analysis helped uncover youth saving patterns separating savings (1) and savings for retirement (2). Although the impact of behavioral factors like self-control, obeying the rules, and autoenrollment on saving for retirement was analyzed in the literature (Benartzi & Thaler, 2007; Goldring & Azab, 2020), it is relatively rare to focus on the youth. We also analyzed the youth's personal financial commitments and trust in state institutions. The latter is linked here to the expectations regarding minimum pension introduction, which is novel compared to Foster (2017), who considered the trust in public and private pension providers. A broad comparison of saving behaviors concerning different time horizons and the intergenerational perspective has not been studied. Thirdly, the policy recommendations formulated from the BLCH perspective regarding not only the role age differences play in saving behavior but also a variety of other factors, which in traditional economics would have been considered irrelevant (Thaler, 2018) are constructed based on the study results. Therefore our study enables us to incorporate behavioral heuristics as savings determinants in retirement policy planning, which in mainstream economics would base on income factors entirely. In current practice, institutional factors, like tax incentives, have been put forward to facilitate individuals to save for retirement in individual and occupational pension schemes (Szczepański, 2021). Only the rule of automatic enrollment into pension schemes is based on behavioral findings (Benartzi & Thaler, 2007).

The remainder of the article is organized as follows. Section two discusses the literature review describing different retirement savings determinants, emphasizing the behavioral life-cycle hypothesis. The data and methodology are described in sections three and four, respectively. The results of the empirical research are presented in section five. The last section offers the discussion and conclusions.

2. Literature review

Young people decide about saving based not only on their current income or wealth status, but also because of behavioral, demographic, and educational factors. However, behavioral characteristics that determine the Z generation's consumption and savings patterns are critical and differ from their parents (Goldring & Azab, 2020). In this sense, the problem of youth savings is consistent with the behavioral theory, which considers supposedly irrelevant factors as particularly important in predicting saving behavior (Thaler, 2018). Behavioral characteristics, like self-control, mental accounting, and framing are incorporated in the Behavioral Life Cycle Hypothesis proposed in 1988 by Shefrin and Thaler (Shefrin & Thaler, 1988). Mental accounting implies that the saving rate can be affected by how increments in income and wealth are framed.

From the perspective of BLCH, saving for retirement is particularly difficult for young people because retirement is temporally distant and intangible. In addition, procrastination and time-inconsistent preferences may impede the retirement savings behavior of the young (Thaler, 1990). The cost of exercising the willpower to reduce the current relatively low consumption level to save for retirement is exceptionally high at low levels of income and young ages

(Shefrin & Thaler, 1988). The BLCH has been used in retirement savings analysis, particularly regarding the worldwide trend of going away from defined benefit retirement plans toward defined contribution plans, allowing employees to decide how much to save for retirement, i.e. 401(k) retirement saving plans in the United States or Employee Capital Plans (PPK) introduced recently in Poland. A systemic reform imposing so-called (partially) funded defined contribution (DC) schemes that translate longevity into an automatic reduction in effective replacement rates was also implemented by some other Central and Eastern European countries, as well as Sweden among others (Makarski et al., 2016). The inertia that rationalizes why automatic enrollment has the effect of increasing participation rates can also lead to low saving rates for those who participate. Once workers are enrolled in a scheme, they tend to stick to the same savings rate and do not look to increase their contributions or put in additional savings (Thaler & Sunstein, 2008). Particularly for young who start saving for retirement, it is essential to study savings patterns because most people adopt simple rules in their decision-making process of saving (Benartzi & Thaler, 2007).

Besides behavioral determinants of savings, several studies considered different socio-economic factors influencing saving for retirement decisions. Most of them focus on the determinants of saving for retirement by people close to retirement age (Walczak et al., 2018). Some researchers underline that knowledge about the pension is still limited, intensifying the risk of under-saving for retirement among the young, particularly for women (Foster et al., 2019). People who are wealthier and better educated were identified to save more for retirement (Joo & Grable, 2005; Hassan & Lawrence, 2007). Financial education with financial skills increases the probability of saving for retirement (Amari et al., 2020; Chalimah et al., 2019; Clark et al., 2006; Gerhard et al., 2018; Rajan & Abdullah, 2017). Lack of trust in state institutions perceived inability to afford the contributions to a pension scheme at present, and myopic view of incomes were significant determinants of youth decisions toward saving for retirement (Foster, 2017).

In the context of the need to be advised, family patterns play a significant role in developing saving habits in young adults (Gettings & Anderson, 2020; Pettigrew et al., 2007; Tang & Peter, 2015). Parents act as behavioral models and as sources of retirement savings advice for their children (Gettings & Anderson, 2020; Robertson, 2019). The family composition may also play an important role (Lee & Schaninger, 2003). Married young adults (22–35) were more likely to save for retirement than their single counterparts. Even after accounting for proven retirement correlates, child-rearing and marital careers are still linked to women's retirement plans (Damman et al., 2015).

Concerning the age differences in saving decisions, future-oriented attitudes might be necessary for younger adults to save for retirement (Rolison et al., 2017; Loichinger et al., 2017). However, individual responsibility for financial security during retirement has not been studied before. Differences in age-specific economic behavior and the age composition of the populations play an important role in mitigating the expected increase in economic dependency due to demographic change (Loichinger et al., 2017). According to Koposko et al. (2015), the older and closer to retirement men save more for retirement (Hassan & Lawrence, 2007). Choi et al. (2009) found that when pension savers achieve a high rate of return on their existing investments and become wealthier, they increase their contributions, presumably because they anticipate similar investment returns in the future.

Referring to GenY and GenZ, Bencsik et al. (2016) found that Zs are perceived as a generation who tends to save, while Ys typically do not care about their savings. Conversely, Debevec et al. (2013) concluded that younger millennials are less likely than older millennials

to save instead of consuming, not giving priority to savings as it was for older millennials (Debevec et al., 2013). Traynor (2015) demonstrated preferences for making savings by these generations. House, travel and further education are highly preferred, while retirement or having children are rarely chosen. Even though it is also underlined that young adults in Poland often do not know how to manage their money effectively and secure themselves against low pensions in the future (Musiał & Świecka, 2016; Marody et al., 2019; Sawulski, 2019).

The individual perspective presented above should be supplemented by more general analyses, which in fact motivates in-depth research. There is a stream of literature concerning macroscale related to pensions, welfare effects, and overlapping generation models (Makarski et al., 2016; Makarski & Tyrowicz, 2019). Both papers relate to the pension system's legal conditions in Poland. In the first one authors considered replacing the pay-as-you-go defined benefit (PAYG DB) system with an at least partially funded defined contribution (DC) system which generates fiscal costs that need financing. They compared the welfare effects of the various fiscal closures of the pension system reform. They showed that depending on the fiscal closure, the welfare effects differ substantially for the same pension system reform. The financing of the pension system gap with public debt allows more intergenerational redistribution. In the second paper, the authors analyzed such a politically sensitive issue as the retirement age, i.e. a minimum eligibility retirement age (MERA). They constructed a series of overlapping generations models to determine the welfare effects of increasing the retirement age (by as much as 15%) and employed demographic projections to obtain a realistic scenario of longevity. Two pension schemes were considered, i.e. PAYG DB and PAYG DB with a DC system. In both cases, the baseline scenario is characterized by unchanged MERA, despite demographic changes. They found the effects of increasing the retirement age are quantitatively larger than those attributable to the introduction of a pension scheme encouraging more private savings. These effects on capital were stronger in the economy with a DC system.

The macro perspective of retirement is most often unaware to young individuals who, however, decide whether to save or not to save for retirement and how to create their lifetime utility. The individual perspective allows the creation of diversified and demographically adjusted pension schemes, that can be further evaluated for cost/benefits effectiveness.

3. Data characteristics

3.1. Questionnaire construction

The survey questionnaire consisted of 26 questions based on the survey methodology (Fowler, 2009; DeVellis, 2016). The questions concerning determinants of saving and saving for retirement were grouped into demographic, behavioral, educational, and financial. Regarding the first group of factors, we asked about, among others, age and family composition. The survey questionnaire also included questions bearing on the BLCH predictions regarding mental accounting self-control, the cost of willpower, trust in state institutions, as well as individual responsibility for financial security during retirement. Questions regarding education were about the level and kind of education and parents' education. The group of financial questions was concerned with income, accumulated wealth, and investment experience. Selected questions in the survey with reference to the literature are presented in Table 1.

Table 1
Selected questions in the survey with reference to the literature.

Factors of saving for retirement:	The question in the survey about:	Links to the literature:
Demographic		
Age, intergenerational differences in saving patterns	Three age groups (18–24; 25–29; 50–60)	Goldring & Azab (2020) ; Rolison et al. (2017) ; Loichinger et al. (2017) ; Koposko et al. (2015)
Gender	Women/ Men	Foster et al. (2019) ; Knoll et al. (2012) ; Damman et al. (2015)
Family composition	Multiperson household	Lee and Schaninger (2003)
Behavioral		
Mental accounting	Income/ Wealth mostly determines my consumption decisions	Thaler (2018) ; Shefrin and Thaler (1988)
Self-control and the cost of willpower	The rules of consumption control in order to save; regular monitoring of consumption; the deliberate sacrificing of current consumption for the sake of a higher pension in the future	Shefrin and Thaler (1988) ; Benartzi and Thaler (2007)
Personal financial responsibility	Belief in saving for retirement for your own	Proposed by authors
Trust in state institutions (minimum pension)	A belief that introducing a minimum pension will ensure financial security in the future	c.f. Foster (2017)
Educational		
Education	Level and kind of education, i.e., secondary/ higher/economic/arts, etc.	Joo and Grable (2005) ; Hassan and Lawrence (2007) ; Rajan and Abdullah (2017) ; Gerhard et al. (2018) ; Chalimah et al. (2019)
Parents' education	Level of education	Tang and Peter (2015)
Financial		
Income/ wealth level	Income/wealth ranges in PLN	Joo and Grable (2005) ; Hassan and Lawrence (2007)
Investment experience	Financial investment (shares, bonds, gold, etc.).	Choi et al. (2009) ; Andersen and Hermansen (2014)

A detailed description of the questions and an explanation of the variables' names is provided in Appendix.

3.2. Sample characteristics

The young people were divided into the younger ones (18–24 years old) and the older ones (25–29 years old) to identify the differences between saving behavior considering their life-cycle phases. A group of people ages 50–60 years old was taken to enable an intergeneration comparison.

The data were collected by Kantar, Poland, based on the authors' questionnaire in December 2020. The sample was randomly drawn using a stratified random sampling scheme, covering socio-economic and demographic factors such as region, gender, education, income, etc. The sample corresponds to the population structure provided by Statistics, Poland. It consisted of 1000 Poles in the following age groups: 400 at 18–24, 400 at 25–29, and 200 at 50–60. Interviews were conducted using the CAWI method. The respondent's consent to participate in the survey was preceded by the interviewer providing reliable information on the scope,

purpose, and possibility of refusing to participate in the study and the anonymity of the answers provided. The anonymity means that the results gathered during the research were used solely for collective statistical analyses and were not identified with a given respondent in any way. The survey questionnaire was approved by the Research Ethics Committee in the Faculty of Economic Sciences and Management in Nicolaus Copernicus in Torun (decision no. 1/2022/FT).

The data were cross-validated with the control variables such as income, number of people in the household, and type of economic activity. Due to missing observations, the final numbers of observations were: 373 in groups 18–24, 379 in 25–29, and 186 in the oldest group. As a result, 701 samples were analyzed for this study. Of these, 612 respondents (87.30%) save without any specific aim in the short-run perspective. However, only 116 (16.55%) save for retirement. In each age group, the share of people who saved in the short-run perspective was much higher than those who saved for retirement. Such an observation confirms the difficulty when a long-term saving commitment. The detailed characteristics of the sample are presented in [Table A2](#) in Appendix.

4. Methodology

The first-glance methodology for survey data is related to descriptive analysis and empirical distributions of the individual answers, which are collected as microdata. They reveal the frequency of responses related to the possible variants. Other necessary measures are related to correlation analysis. The answers can be categorized into the following three groups: binary data, ordinal data, and metric data. Such a variety of measurement scales allow using only methods available at weaker scales ([Wiśniewski, 2016](#)). It is worth noting that ordinal data are ordered logically on a five-point Likert scale, where '1' means 'strongly disagree', and '5' represents 'strongly agree.' The Likert scale is typically defined as a five (or more) point scale, which allows the individual to express how much they agree or disagree with a particular statement while the central response remains neutral. It falls within the ordinal level of measurement ([Likert, 1932](#); [Jamieson, 2004](#); [McLeod, 2019](#)).

The logit model is a valuable construction that allows estimating the impact of determinants that support one of two variants of the defined variable. In the reported research, dependent variables are constructed as binary ones. Therefore, it is possible to estimate the probability of supporting or not supporting an answer $yes=1$, i.e., saving or saving for retirement. Thus, two endogenous variables were defined as follows:

$$Y_{1i} = \begin{cases} 1, & \text{when respondent saves money} \\ & (\text{with probability } p) \\ 0, & \text{otherwise (with probability } 1 - p) \end{cases} \tag{1a}$$

$$Y_{2i} = \begin{cases} 1, & \text{when respondent saves for retirement} \\ & (\text{with probability } p) \\ 0, & \text{otherwise (with probability } 1 - p) \end{cases} \tag{1b}$$

The single-equation linear model takes the following form:

$$Y_i = \alpha_0 + \sum_{k=1}^K \alpha_k X_{ki} + \varepsilon_i \tag{2}$$

where: X_{ki} denotes the explanatory factors which are defined in the table presented in Appendix.

Since the endogenous variable has only two variants and exogenous variables are metric, ordered, and binary, it is necessary to transform the model to obtain consistent estimates. One of the valuable transformations is logit transformation (Cameron & Trivedi, 2008). Let p denote the probability of a given variant of the defined variable Y conditionally on given values of exogenous variables. Then, we transform probability from the interval (0;1) into logit values from the interval using

$$L = \ln \frac{p}{1 - p} \quad (3)$$

The transformed model takes the following form:

$$L_i = \alpha_0 + \sum_{k=1}^K \alpha_k X_{ki} + \varepsilon_i \quad (4)$$

To find a value of probability p the following transformation is applied (Wiśniewski, 2016):

$$p = \frac{1}{1 + \exp[-(\alpha_0 + \sum_{k=1}^K \alpha_k X_{ki})]} \quad (5)$$

The parameters of model 4 are estimated using the maximum likelihood method. To evaluate the model goodness-of-fit pseudo- R^2 by McFadden (McFadden, 1974) and the ratio of predicted outcomes expressed as Count R^2 (Cameron & Trivedi, 2008) are applied. Parameters of the logit model inform about supporting or negating a probability of gaining the value of one in (1). At the same time, slope parameters are estimated. They are interpreted as marginal effects of exogenous variables on this probability.

Additionally, the pairwise analysis of variables included in the logit models was provided. Originally, least-squares means (LS means) was a linear model programming procedure. LS means are simple predictions or averages on a regular grid set by the predictor (Lenth, 2016). LS means were proposed by Harvey (1960) and implemented by Harvey (1976). According to Lenth (2016), LS means are computed relative to a reference grid. LS means are simply predictions on this grid, or marginal averages of a table of these predictions, once the reference grid has been established. The LS means method simplifies comparing values across groups in linear, cumulative links, and other models. It can also perform comparisons between different components' interactions. The study uses the LS means method to do the pairwise analysis to compare the effect of other groups in categorical variables on dependent variables. All calculations presented in the paper were prepared using the LS means function in R, which was created by Lenth (2016).

5. Results

This section shows the empirically estimated logit models. Starting from formula (2), we estimated the parameters of two logit models (4) using all exogenous variables. Then, a backward stepwise analysis was employed. Its principal function is to optimally filter out the variables according to their explanatory power and simplify the model (Wang et al., 2007). In this study, the log-likelihood ratio test (LRT) was used as a variable selection criterion. As a result, the variables shown in Table 2 were chosen as the explanatory variables to predict saving decisions in eight models. For Models (4), (6), and (8), since the regression does not converge

Table 2
Estimated Logit Models by Age Groups.

Dependent Variable	Save for retirement							
Model	All Age (1)	Age 0 (2)	Age 1 (3)	Age 2 (4)	All Age (5)	Age 0 (6)	Age 1 (7)	Age 2 (8)
Demographic								
D2								
25–29 (1)	-0.74 * (0.37)	-	-	-	0.63 * (0.37)	-	-	-
50–60 (2)	-1.44 * ** (0.52)	-	-	-	2.01 * ** (0.44)	-	-	-
D3								
< 10,000 (1)	-0.78 (0.63)	0.33 (1.49)	-0.57 (1.02)	-	-0.29 (0.61)	-	-0.17 (0.99)	4.16 (13.16)
10,000–19,999 (2)	0.18 (0.62)	0.76 (1.59)	1.01 (1.07)	-	0.58 (0.51)	-	0.03 (0.89)	-1.31 (1.86)
20,000–49,999 (3)	0.32 (0.46)	-1.47 (1.12)	0.86 (0.82)	-	-0.65 (0.55)	-	-16.92 (999.33)	2.26 (1.81)
50,000–99,999 (4)	-0.43 (0.50)	-1.98 * (1.08)	1.75 (1.18)	-	0.64 (0.44)	-	-0.57 (0.80)	8.11 * * (3.28)
100,000–199,999 (5)	-1.04 * (0.55)	-2.10 (1.44)	-0.70 (1.02)	-	-0.11 (0.55)	-	0.90 (0.80)	-5.06 * * (2.55)
200,000–499,999 (6)	1.53 * (0.79)	22.91 (4253.69)	1.05 (1.39)	-	0.48 (0.47)	-	-0.68 (0.98)	1.32 (1.76)
500,000–999 999 (7)	1.03 (0.88)	19.85 (6229.65)	1.15 (1.12)	-	0.28 (0.58)	-	-0.10 (0.90)	5.46 (8.80)
> 1000,000 (8)	-0.89 (0.68)	-2.59 (2.04)	-1.04 (1.09)	-	2.01 * ** (0.58)	-	2.51 * * (1.06)	1.43 (2.92)
D4								
Eastern (1)	-0.09 (0.47)	-0.57 (1.19)	0.09 (0.90)	-	-0.01 (0.46)	-	0.26 (0.88)	-2.96 (2.15)
Southern (2)	0.52 (0.50)	1.68 (1.30)	0.24 (0.86)	-	0.34 (0.46)	-	0.18 (0.84)	-7.27 * * (2.83)
Northern (3)	-0.11 (0.56)	-1.47 (1.65)	-0.86 (0.96)	-	0.34 (0.46)	-	1.09 (0.84)	-16.66 * * * (5.41)
North-west (4)	0.49	-0.05	1.53	-	0.02	-	-0.28	-5.36 * * (continued on next page)

Table 2 (continued)

Dependent Variable	Save			Save for retirement		
South-west (5)	(0.52) 0.26 (0.59)	(1.18) 1.95 (1.66)	(1.15) -0.44 (0.99)	(0.51) -0.14 (0.49)	-	(0.94) 0.78 (3.49)
D5	0.15 (0.37)	0.63 (0.88)	0.58 (0.63)	0.15 (0.32)	-1.43 * (0.86)	2.52 (1.60)
Behavioral						
B2	0.10 (0.13)	-0.05 (0.29)	0.30 (0.25)	0.04 (0.12)	0.43 (0.37)	0.83 (0.55)
B3	-0.19 (0.14)	0.06 (0.46)	-0.57 ** (0.26)	0.13 (0.12)	1.17 ** (0.47)	1.06 (0.74)
B5	0.22 (0.14)	0.73 ** (0.36)	-0.16 (0.28)	-0.10 (0.14)	-0.34 (0.42)	0.46 (0.51)
B6	0.11 (0.14)	0.12 (0.35)	0.43 (0.32)	0.10 (0.13)	-0.62 (0.51)	2.06 *** (0.62)
B7	0.06 (0.15)	0.28 (0.45)	0.21 (0.29)	-0.07 (0.11)	0.92 * (0.47)	-0.52 ** (0.21)
B8	0.10 (0.15)	0.13 (0.36)	0.17 (0.29)	0.09 (0.13)	-0.23 (0.44)	1.71 ** (0.76)
B9	0.29 * (0.15)	0.75 (0.44)	0.50 * (0.26)	0.11 (0.13)	0.40 (0.43)	-0.95 * (0.49)
Educational						
E1						
Vocational (1)	-0.50 (0.53)	-1.33 (1.49)	-1.63 (1.19)	-0.77 * (0.47)	-0.79 (1.28)	-3.76 * (2.28)
Secondary (2)	-0.76 (0.53)	-1.69 (1.21)	-1.40 (1.15)	-0.09 (0.46)	-0.57 (1.23)	1.70 (1.91)
High (3)	-0.98 * (0.56)	-3.25 ** (1.39)	-1.68 (1.25)	-1.14 ** (0.51)	-1.67 (1.41)	-3.10 (2.76)
E2						
Vocational (1)	0.55 (0.50)	0.24 (1.17)	0.93 (1.14)	0.59 (0.53)	0.21 (1.35)	8.39 ** (3.37)
Secondary (2)	0.73 * (0.41)	2.10 ** (0.93)	-0.16 (0.99)	-0.08 (0.49)	1.06 (1.07)	4.80 * (2.67)

(continued on next page)

Table 2 (continued)

Dependent Variable	Save			Save for retirement		
High (3)	0.87 (0.56)	19.84 (3304.88)	0.21 (1.02)	-	-1.14 (0.51)	3.97 (1.80)
E5	0.54 (0.57)	20.88 (5206.13)	1.71 (1.06)	-1.82 * (1.31)	0.46 (0.41)	3.07 ** (1.32)
Financial						
F1						
1000–2000 (1)	-0.30 (0.40)	0.11 (0.90)	-0.44 (0.74)	-2.72 (2.00)	-0.02 (0.48)	0.68 (1.02)
2000–3000 (2)	0.87 * (0.45)	3.02 ** (1.20)	1.37 (0.85)	-5.34 * (2.93)	0.00 (0.48)	-0.88 (1.36)
3000–4000 (3)	1.46 * (0.77)	23.43 (2801.64)	1.72 (1.19)	-2.86 (2.36)	0.30 (0.54)	0.61 (1.28)
> 4000 (4)	-0.22 (0.60)	-1.43 (1.56)	1.48 (1.38)	-6.38 ** (3.13)	0.01 (0.56)	-0.75 (1.99)
F3						
10,000–20,000 (1)	0.46 (0.42)	-1.42 (1.00)	0.75 (0.70)	2.02 (1.58)	-0.62 (0.44)	-0.71 (1.31)
20,000–50,000 (2)	0.62 (0.46)	0.33 (1.11)	1.33 (0.91)	3.16 * (1.78)	-0.35 (0.43)	-0.26 (1.08)
50,000–100,000 (3)	0.19 (0.48)	-1.50 (1.26)	1.09 (0.98)	-0.66 (1.78)	-0.70 (0.50)	-1.34 (1.31)
> 100,000 (4)	0.62 (0.48)	1.64 (1.75)	-0.19 (0.78)	3.53 ** (1.54)	0.15 (0.38)	-3.27 (2.3)
F4						
< 2 months (1)	1.01 *** (0.37)	2.90 *** (1.11)	-0.11 (0.63)	4.34 ** (1.96)	-0.26 (0.47)	-0.36 (1.26)
< 6 months (2)	1.52 *** (0.42)	2.38 *** (0.90)	1.90 ** (0.61)	5.58 *** (2.08)	-0.34 (0.44)	-0.65 (1.11)
< 12 months (3)	2.66 *** (0.64)	18.57 (3523.92)	2.99 *** (1.06)	5.28 *** (1.75)	0.09 (0.45)	-0.95 (1.40)
> 12 months (4)	2.95 ***	4.70 ***	2.50 **	25.32	0.10	-0.10

(continued on next page)

Table 2 (continued)

Dependent Variable	Save	(1.79)	(0.02)	(2009.59)	(0.46)	(1.29)	(0.84)	(1.82)
F5	(0.66) 2.35 * ** (0.84)	2.73 (2.38)	1.64 (1.41)	-	-0.50 (0.41)	-2.93 * (1.60)	-0.31 (0.72)	-
F6	2.41 * ** (0.88)	6.40 * ** (2.54)	1.39 (1.50)	-	-0.82 * (0.45)	-1.11 (1.47)	-0.50 (0.79)	-
F7	-1.27 (0.83)	-2.94 (1.92)	-0.11 (1.62)	-	0.66 * (0.39)	0.58 (1.10)	0.58 (0.62)	-
F9	-0.36 (1.03)	-3.45 (2.58)	-1.73 (1.80)	-	1.10 * ** (0.40)	0.63 (1.30)	2.02 * ** (0.69)	-
F11	15.15 (640.02)	23.13 (3003.56)	16.06 (1385.30)	-	0.89 * ** (0.42)	2.80 * ** (1.34)	0.09 (0.63)	-
F12	-0.78 (0.89)	2.32 (1.81)	-0.71 (1.80)	-	0.83 * (0.43)	2.60 * ** (0.67)	1.10 (0.72)	-
F14	-0.69 (0.85)	-5.52 * ** (2.04)	17.32 (1500.85)	-	0.79 * (0.41)	1.63 (1.21)	1.57 * ** (0.68)	-
Constant	-1.88 * (1.02)	-5.72 (2.62AIC)	-2.35 (1.71)	-0.49 (1.29)	-3.71 * ** (1.01)	-6.87 * ** (2.97)	-2.55 * ** (1.57)	-2.4 (1.59)
AIC	455.65	184.438	232.327	73.880	553.980	145.028	269.493	143.932
BIC	683.202	355.902	411.991	113.476	781.634	270.053	449.157	259.893
McFadden R ²	0.328	0.555	0.420	0.520	0.278	0.504	0.344	0.626
Count R ²	0.897	0.897	0.897	0.920	0.880	0.958	0.894	0.896
Observations	701	264	312	125	701	264	312	125
Log Likelihood	-177.824	-44.219	-68.164	-22.940	-226.990	-37.514	-86.746	-30.966

Note: Model (1) (2) (3) (4) present the results of logit regression for saving behavior, Model (1) is the results for all age groups, Model (2) shows the results for age group 0 (18–24), Model (3) demonstrates the results for age group 1 (25–29), and model (4) is the results for age group 2 (50–60); Model (5) (6) (7) (8) present the results of logit regression for saving for retirement, Model (5) is the results for all age group, Model (6) shows the results for age group 0 (18–24), Model (7) demonstrates the results for age group 1 (25–29), and model (8) is the results for age group 2 (50–60); Standard error is in the parentheses; *, **, *** represent significance at 0.1, 0.05, and 0.01 levels, respectively.

due to the small size of the sample, variables with big standard errors were excluded from the model.

The logit models were estimated according to the age criterion, mainly two generations of young adults were considered, i.e., 'Age 0' for the young ages 18–24, 'Age1' for the group ages 25–29, and 'Age2' for the respondents aged 50–60. The 'All Age' models are presented for comparison (Table 2).

Models (1), (2), (3), and (4) show the analysis of respondents' saving behavior by age group, while models (5), (6), (7), and (8) examine the behavior of saving for retirement by age group. According to formula (1), both dependent variables are defined on a nominal scale. The questions were: do you save/do you save for retirement, and the answer "yes" was denoted as 1, and "no" was assigned 0. The explanatory variables were grouped into four categories: demographic, economic, behavioral, and educational. The variable names and corresponding descriptions are shown in Appendix (Table A1).

Table 2 demonstrates that different factors influence respondents' savings and saving for retirement in particular age groups. The estimated coefficients are the odd ratios, i.e., representing the category's probability divided by the reference category's likelihood. The models fit well with the empirical data; mainly, CountR² is above 0.8 in all cases, confirming the model identifies the proper structure of zeros and ones.

Model (1) analyzes the behavior of all age groups toward saving, with Age 0 as the reference group (D2). In general, financial factors like, the savings level allowing one to live without current income (F4), investment experience (F5), and plans to invest in the future (F6) play an important role when making savings decisions. The results also confirm that people reducing their spending to increase their pension are more likely to save (B9 with a coefficient of 0.29). For the 18–24 age group (Model 2), household income and held savings influenced the saving behavior. Reasonable control over consumption behavior positively affected saving behavior, with a coefficient of 0.73 on the (B5). Parents' education level (E1) influenced respondents' saving behavior, increasing the probability of saving. Besides, the education level of respondents (E2) either impacted their saving behavior. For the 25–29 age group (Model 3), the held savings also affected their saving behavior as coefficients for (F4) groups are significant. Those who believed that income mostly influences their consumption behavior (B3), were less likely to save, as the sign of the estimated coefficient is negative. Model (4) presents the results of a logit model analyzing the saving behavior of the 50–60 age group. The results show that people with different levels of wealth have other saving behavior (variable F3). In addition, saving sufficiency influenced their saving behavior (variable F4).

Model (5) is a logit regression analyzing all respondents' saving for retirement behavior. The results showed that those aged 25–29 and 50–60 are more likely to save for retirement than 18–24 years old (as shown in D2). Besides, parents' education level (E1) affects respondents' saving for retirement behavior. For all respondents, having investment in land (F9 with a coefficient of 1.10) and gold (F11 with a coefficient of 0.89) had a greater probability of saving for retirement. Regarding the results for the age group 18–24 (Model 6), being a member of a multiperson household harmed retirement savings (significant coefficient of –1.43). Besides, those who believed that income and wealth influence their consumption behavior (B3) and those with gold and bitcoin investments (F11 and F12) would be more likely to save for retirement. For those in the 25–29 age group (model 7), wealth level (F3) and possessing bond investments affect behavior toward saving for retirement (coefficients of 1.01 and 1.57, respectively). Those who are more likely to believe that the systemic introduction of a minimum pension will ensure future financial security are less likely to save for retirement (coefficient of –0.52). In contrast,

those who believed they could accumulate funds for a higher pension in the future individually and had invested in the land were more likely to save for retirement (coefficient of B8 is 0.51). For those in the 50–60 age group (Model 8), people who have a stronger manner to control spending behavior (B6) and who believed they could accumulate funds for a higher pension in the future individually had a higher probability of saving for retirement as well as those who invested in the land (coefficient of B8 is 1.71).

Since the logit model only compares the other factors with baseline factors, the research implicates the pairwise comparisons of contrasts by comparing the mean across different groups when the effect of other variables remains the same. The result of the pairwise analysis for saving for retirement (corresponding to Models 5–8 in Table 2) is presented in Table 3, while the respective analysis related to saving behavior (referring to Models 1–4 in Table 2) is presented in Zenodo repository (DOI: 10.5281/zenodo.7649084).

A comparison for all Age groups shows that with increasing age, the probability of saving for retirement increases. When considering the youngest age group (Age 0), people's attitude toward saving for retirement is indifferent across different householder income levels (F1), personal income (F2), wealth level (F3), and savings sufficiency (F4). The comparison between the answers demonstrates that for people aged 18–24, their saving for retirement behavior is not affected by their financial conditions.

When considering people's saving for retirement behavior in the age group 25–29 (Age 1), those with wealth (F3) greater than PLN 100 thousand are more likely to save than those with wealth levels of PLN 10–20 thousand and PLN 50–100 thousand at the 0.05 level of significance.

Age 2 considers the age group 50–60 years old. People whose monthly disposable income (F1) is lower than PLN 1000 are more likely to save for retirement than other groups. And people whose monthly disposable income is from PLN 1000–2000 are less likely than those with monthly disposable income from PLN 2000–3000. People aged 50–60, with wealth levels below PLN 10,000 are most likely to have the behavior of saving for retirement. For the other wealth levels, the behavior of 50–60 years old towards saving for retirement does not differ at the 0.05 level of significance. Also, saving sufficiency has a positive impact on saving for retirement behavior.

6. Discussion

Given the problems of aging populations and the fact that young adults have the longest to contribute to pensions demonstrates the need to analyze the behavioral determinants of saving for retirement among young adults to ensure their financial security through policy planning for appropriate decisions towards savings for retirement (Fraccaroli & Deller, 2015).

In the delimited age groups: 18–24, 25–29, and 50–60, the share of people intentionally saving for retirement was 8.33%, 15.06%, and 37.60%, respectively. The shares are low, but the pension regulations in Poland require regular contributions for the defined benefit pension scheme for full-time and part-time employed persons, self-employed, and temporarily employed. Therefore, most people contribute, which is included in every-month salary. However, it happens less frequently among young adults under 26 years old, who are mostly temporary and part-time employed. If they study in the formal education system, then they may be exempted from paying compulsory pension contributions. Therefore, all the more reasons for additional incentives for saving for retirement are necessary for the youth.

Table 3

Results of Pairwise Analysis of Save for Retirement for the Age Groups.

Dependent Variable	Save for Retirement			
	All Age (1)	Age 0 (2)	Age 1 (3)	Age 2 (4)
Demographic				
D2				
0–1	-0.63 **			
0–2	-2.01 ***			
1–2	-1.38 ***			
Financial				
F1				
0–1	0.02	-0.68	-0.17	15.13 ***
0–2	0.00	0.88	-0.03	10.18 **
0–3	-0.30	-0.61	-0.35	13.63 **
0–4	-0.01	0.75	-0.45	10.46 **
1–2	-0.02	1.57	0.14	-4.94 **
1–3	-0.32	0.07	-0.18	-1.49
1–4	-0.03	1.44	-0.28	-4.66
2–3	-0.30	-1.50	-0.32	3.45 *
2–4	0.00	-0.13	-0.42	0.28
3–4	0.30	1.36	-0.10	-3.17
F3				
0–1	-0.46	0.71	0.96	7.77 ***
0–2	-0.62	0.26	-0.60	9.64 ***
0–3	-0.19	1.35	2.18	8.11 ***
0–4	-0.62	3.27	-0.61	7.60 ***
1–2	-0.16	-0.45	-1.56 *	1.87
1–3	0.27	0.64	1.22	0.34
1–4	-0.16	2.56	-1.58 **	-0.18
2–3	0.43	1.09	2.78 **	-1.53
2–4	0.01	3.01	-0.02	-2.04
3–4	-0.43	1.92	-2.80 **	-0.51
F4				
0–1	0.26	0.36	0.07	6.02 **
0–2	0.34	0.65	0.93	2.09
0–3	-0.09	0.95	0.08	-1.88
0–4	-0.10	0.10	1.21	-1.85
1–2	0.08	0.29	0.86	-3.93
1–3	-0.35	0.59	0.01	-7.90 ***
1–4	-0.36	-0.26	1.14	-7.88 **
2–3	-0.43	0.30	-0.85	-3.97 **
2–4	-0.44	-0.55	0.28	-3.94 **
3–4	-0.01	-0.85	1.13	0.03

*, **, *** represent significance at 0.1, 0.05, and 0.01 levels, respectively. The pairs like 0–1, 0–2, etc., mean the comparison between the group in front and the group in the back. Numbers refer to the variables named in the Appendix (Table A1).

The empirical results provide evidence that allowed answering all the research questions. Firstly, the research results confirmed the reliability of the BLCH for research on retirement savings with respect to the generations. The study identified the differences between saving decisions based on income and wealth regarding mental accounting, allowing the division of assets according to their liquidity. However, only people being close to retirement with higher

wealth levels can afford to save from their current income because they do not have to make ends meet. It is consistent with the BLCH, according to which the saving rate is affected by how income and accumulated wealth increments are framed. With a relatively high wealth level, an increase in wealth reduces the temptation to spend on consumption instead of savings to a greater extent than with a low wealth level possessed most often by the youngest (Shefrin & Thaler, 1988).

In the broader context, it should be referred to the transitional CEE societies that on average did not experience a long period of increased wealth accumulation and, as a result, are characterized by relatively low median net household wealth - in Poland about 55% of the eurozone average (Grejcz & Żółkiewski, 2017). Therefore young generations are still in the process of catching up with the European Union's average living standards level. However, based on the results of Brzeziński et al. (2020) with respect to the level of wealth inequality, the CEE countries have already caught up with Western Europe, i.e. the share of the top 1% in total household wealth in Poland is as high as Spain, despite the relatively shorter process of wealth accumulation under market conditions. Wealth disparities in post-transition CEE societies suggest differences between saving rates and saving for retirement incentives for the poor and the rich.

Regarding the cost of willpower, it is less costly to postpone a portion of consumption until retirement for relatively wealthy people (Shefrin & Thaler, 1988). Obeying internal rules increases the probability of retirement savings for the generation 50–60 years old. However, considering intergenerational differences, our results did not reveal that self-control is necessary for young generations to decide about saving for retirement.

The study also demonstrated that personal responsibility for financial security in old age significantly affected retirement savings decisions among young adults in Poland. Furthermore, it enabled defining of saving patterns across generations on the basis of which policy recommendations are formulated. The confidence that consumer spending should be regularly controlled increased the probability of saving among the 25–29 age, proving that the cost of willpower plays an essential role in deciding to consume now or postpone it to the future, which is particularly difficult for the young (Thaler, 1990). High expectations and trust towards state institutions reflected in the systemic pension implementation were crucial for young adults (GenZ) entering the labor market, increasing the probability of saving for retirement based on individual decisions. Conversely, in the group of GenY starting their financially independent life, trust in state institutions and expectations about financial security in old age, decreased the probability of saving for retirement intentionally. Additionally, their belief in ensuring financial security by themselves (personal financial responsibility) makes them more likely to increase retirement savings. Together with the preferences to invest, the results suggest the propensity to allocate their money individually, to increase their general wealth, and increase financial security.

Regarding the second research question, when differences between generations Z, Y, and older were analyzed, the evidence that the probability of saving for retirement significantly increases with age is critical. At the same time, age differences were significant for saving without any purpose decisions referring to the third research question. However, several other distinguishing factors were identified for each generation, varying savings for retirement from other saving decisions.

Among financial factors, investments in bonds supported decisions to save for retirement among the Y generation. Similarly, in the youngest group, investments in gold and bitcoins played a positive role in this perspective. Such experience ensures young individuals that it is

possible to gain and build their personal wealth. Moreover, several behavioral factors determined the probability of retirement savings. Firstly, the trust in the state institutions to introduce minimum pension to ensure financial security during retirement increased the probability of saving for retirement among GenZ. However, the same variable reduced the Y generation's retirement savings. Moreover, the conviction of those aged 25–29 about their ability to ensure future financial security increased retirement savings. On the other hand, the 50–60 generation is the only one for which using rules for consumption positively affected the decisions to save for retirement.

Based on the study, fewer determinants significantly affected the general savings decisions. For GenZ, the income per person and savings sufficiency was essential. Capital investments increased the probability of saving decisions among the Z generation. Among the behavioral factors, regular monitoring and controlling spending increased the likelihood of saving in the youngest adult group.

When comparing the results with the literature, it was confirmed that there are significant differences in economic behavior regarding savings patterns between age groups (Loichinger et al., 2017). It was shown that trust in state institutions matters when making decisions toward saving for retirement and the results are in line with Foster (2017) and Pettigrew et al. (2007). Based on whether financial security in the future can be assured by the state introducing systemic pension, we revealed that feelings about future financial security are essential in increasing young adults' probability of saving for retirement decisions. Procrastination and time inconsistency are also evident among young Poles. Long time distance to retirement for the Z generation resulted in the lowest probability of saving for retirement. Those results confirmed the conclusion of Pettigrew et al. (2007) and Koposko et al. (2015). However, in our research, gender did not play an essential role in saving for retirement decisions. Therefore, the findings contradict Koposko et al. (2015) and Hassan and Lawrence's (2007) results, who revealed that gender plays an essential role in making saving for retirement decisions for adults close to retirement age in the United States.

The reported results are similar to Pettigrew et al. (2007), Chalimah et al. (2019), and Gettings and Anderson (2020), when parents' role in developing youth saving for retirement patterns is analyzed both through parents' education and income per person in the household. In this sense, parents' affluence and family backgrounds and patterns play significant incentives for youth deciding towards saving for retirement. Furthermore, having investments in i.e. land, gold, bitcoin, and bonds increases the probability of saving for retirement among both generations of young adults in Poland. This result is in line with Choi et al. (2009), who concluded that the rewarding personal experience (personal investment history) might increase saving for the retirement rate. Even though financial literacy was significantly associated with savings for retirement decisions in many studies, our research proved that economic education does not seem to matter to savings, particularly retirement savings decisions. Our results are in line with De Cecco and Estache (2016), who identified no significant relationship between financial literacy and saving for retirement decisions among Belgian students.

7. Conclusions

The current research offers an in-depth insight into the role behavioral versus demographic, educational, and financial determinants play when young adults in Poland decide about saving for retirement. Even though previous studies analyzed the financial, educational, and demographical (Pascual-Saez et al., 2020) determinants of savings, there were no studies focusing on

behavioral factors affecting the retirement decisions of young generations in transitional economies like Poland. Moreover, the divergence of retirement saving determinants between two generations of young Poles, allowed for identifying saving patterns appropriate to the Y and Z generations.

The following saving patterns for youth generations were identified:

1. For the Z generation:

1. investment experience, trust in state institutions -> saving for retirement
2. income and self-control -> saving.

2. For the Y generation:

1. investment experience, personal financial responsibility, trust in state institutions, parents' education level -> saving for retirement
2. investment experience and personal financial responsibility -> saving.

Furthermore, the results coming from the study confirmed that the BLCH provides an excellent theoretical background allowing analysis and policy-making. Identified patterns of saving in the short and long run can be implemented to plan policies to encourage young people to save for retirement to ensure their financial security. It is essential from the perspective of the population's aging. Therefore, in conclusion, the following policy implications are suggested:

1. Due to the fact that only a low share of respondents saves intentionally for their retirement, it is recommended to increase the financial literacy of young people, particularly to educate young people on how to save efficiently. The pension systems consisting of defined benefit and defined contribution systems are fairly complicated for youth, therefore education about different forms of investments is necessary. Such solutions can be introduced at different education levels, in forms appropriate for the age and hitherto knowledge, including examples.
2. It is recommended to construct flexible pension systems adjusted to the young age and income of the employees allowing for an increase in the pension rate gradually. It increases awareness and allows for making reasonable decisions on current and future consumption at a sustainable level.
3. It is recommended to adapt the retirement savings offer to the life cycle and in particular to the preferences of GenZ and GenY; i.e. to let them save with very low savings rates (to decrease the cost of willpower connected with postponing consumption, particularly for the youngest aged 18–24) and to inform about the possibilities to increase the saving for retirement rate in the Employee Capital Plans to avoid the inertia when incomes increase.
4. It is recommended to monitor the trust of young people in public institutions, particularly in the public pension system. Two cases can be considered: (1) a high trust in the public pension system which does not motivate people to save more on their own. However, (2) a lower trust in the state, as in the case of the GenY, can increase young adults' saving for retirement motivation triggering their commitment to financial security, self-awareness, and responsibility for retirement saving seems.
5. It is recommended to adopt the behavioral life-cycle hypothesis into the pension systems, to make them flexible and adjusted to the needs and perceptions of future pensioners.

Altogether, the analysis of young adults saving for retirement determinants provided a precise understanding for policymakers about the Gen Y and GenZ retirement savings decisions, the study results in open new research questions worth answering in the future. One is related to the international comparison of young adults in terms of their attitudes toward saving for retirement and retirement policies. Another one relates saving behavior, including saving for retirement, to the sustainable consumption challenge that stands in front of the youth. Also, financial literacy, including consciousness of creating a retirement policy and individual decision-making process requires in-depth investigation.

Statements and Declarations

No funding was received for conducting this study.

The authors have no competing interests to declare that are relevant to the content of this article.

The dataset is available on request in the Zenodo repository (DOI: 10.5281/zenodo.7649084).

Acknowledgment

The authors are grateful to Matthiew Nagler for reading the early version of the paper and for his helpful comments.

Appendix

Table A1
Variables defined in the study.

Variable name	Question	Scale of measurement
DEMOGRAPHIC		
D1	What is your gender (0: male; 1: female)	Nominal
D2	What is your age group (0: 18–24; 1: 25–29; 2: 50–60)	Ordinal
D3	What is the number of citizens in the city you live in (0: village; 1: less than 10k; 2: between 10k and 20k; 3: between 20k and 50k; 4: between 50k and 100k; 5: between 100k and 200k; 6: between 200k and 500k; 7: between 500k and 1 million; 8: more than one million)	Ordinal
D4	What is the region you live in (0: region central; 1: region eastern; 2: region southern; 3: region northern; 4: region north-west; 5: region south-west)	Ordinal
D5	Does your household consist of more than one person? (0: no; 1: yes)	Nominal
BEHAVIORAL		
B1	Rate on the scale from 1 to 5 to what extent do you agree with the conviction that young people should save systematically (1: strongly disagree, 5: strongly agree)	Ordinal (Likert)
B2	Rate on scale from 1 to 5 to what extent do you agree with the conviction that young people should join systematic savings with high-risk investments (1: strongly disagree, 5: strongly agree)	Ordinal (Likert)
B3	Rate on scale from 1 to 5 to what extent do you agree that current income significantly influences your consumption decisions (1: strongly disagree, 5: strongly agree)	Ordinal (Likert)
B4	Rate on scale from 1 to 5 to what extent do you agree that your wealth greatly influences your consumption decisions (1: strongly disagree, 5: strongly agree)	Ordinal (Likert)
B5	Rate on scale from 1 to 5 to what extent do you agree that you regularly monitor your current consumption expenditures (1: strongly disagree, 5: strongly agree)	Ordinal (Likert)
B6	Rate on scale from 1 to 5 to what extent do you that you use rules to control your spending behavior (1: strongly disagree, 5: strongly agree)	Ordinal (Likert)
B7	Rate on scale from 1 to 5 to what extent do you agree with the conviction that the systemic introduction of a minimum pension will ensure your financial security in the future (1: strongly disagree, 5: strongly agree)	Ordinal (Likert)
B8	Rate on scale from 1 to 5 to what extent do you agree with the conviction that you are able to accumulate funds by yourself for a higher pension in the future (1: strongly disagree, 5: strongly agree)	Ordinal (Likert)
B9	Rate on scale from 1 to 5 to what extent do you agree with the conviction that you are currently reducing your current consumption in favour of a higher pension in the future (1: strongly disagree, 5: strongly agree)	Ordinal (Likert)
B10	Are you saving for future at present (without any aim and time horizon) (0: no; 1: yes)	Nominal
B11	Are you saving for retirement (0: no; 1: yes)	Nominal
EDUCATIONAL		
E1	What is the highest educational level of your parents (0: primary; 1: vocational; 2: secondary; 3: high)	Ordinal
E2	What is your highest educational level (0: primary; 1: vocational; 2: secondary; 3: high)	Ordinal

(continued on next page)

Table A1 (continued)

Variable name	Question	Scale of measurement
E3	Do you work full-time? (0: no; 1: yes)	Nominal
E4	Do you work on a civil contract? (0: no; 1: yes)	Nominal
E5	Do you run your own business? (0: no; 1: yes)	Nominal
E6	Are you working without any formal agreement? (0: no; 1: yes)	Nominal
E7	Are you studying? (0: no; 1: yes)	Nominal
E8	Are you not studying or not working? (0: no; 1: yes)	Nominal
FINANCIAL		
F1	What is the approximate net monthly disposable income (from all sources combined) per person in your household (in PLN) (0: less than 1000; 1: between 1000 and 2000; 2: between 2000 and 3000; 3: between 3000 and 4000; 4: more than 4000)	Metric
F2	What is your individual approximate net monthly disposable income (from all sources combined) (in PLN) (0: less than 1000; 1: between 1000 and 2000; 2: between 2000 and 3000; 3: between 3000 and 4000; 4: more than 4000)	Metric
F3	How much do you estimate your wealth (assets, e.g. computer, car, flat) to be (in 1000 PLN) (0: less than 10; 1: between 10 and 20; 2: between 20 and 50; 3: between 50 and 100; 4: more than 100)	Metric
F4	How long do you think your savings will allow you to live without changing the standard of living with no extra income (0: less than 1 month; 1: less than 2 months; 2: less than 6 months; 3: less than a year; 4: more than a year)	Metric
F5	Do you have capital investment? (0: no; 1: yes)	Nominal
F6	If you do not have capital investments, do you plan to invest? (0: no; 1: yes)	Nominal
F7	Do you invest in shares? (0: no; 1: yes)	Nominal
F8	Do you invest in estate? (0: no; 1: yes)	Nominal
F9	Do you invest in land? (0: no; 1: yes)	Nominal
F10	Do you invest in currency? (0: no; 1: yes)	Nominal
F11	Do you invest in gold? (0: no; 1: yes)	Nominal
F12	Do you invest in cryptocurrency, i.e., bitcoin? (0: no; 1: yes)	Nominal
F13	Do you invest in funds? (0: no; 1: yes)	Nominal
F14	Do you invest in bonds? (0: no; 1: yes)	Nominal

Table A2

The Sample Characteristics [in %].

Variable	Save		Save for retirement		Total
	No	Yes	No	Yes	
D1					
Male (0)	10.80	89.47	80.89	19.39	100 (362)
Female (1)	14.88	86.01	87.20	13.69	100 (339)
D2					
18–24 (0)	12.88	87.12	91.67	8.33	100 (264)
25–29 (1)	12.50	87.50	84.94	15.06	100 (312)
50–60 (2)	12.80	87.20	62.40	37.60	100 (125)
D3					
Village (0)	12.16	87.84	87.16	12.84	100 (296)
< 10,000 (1)	13.95	86.05	88.37	11.63	100 (43)
10,000–19,999 (2)	13.04	86.96	78.26	21.74	100 (46)
20,000–49,999 (3)	14.29	87.01	90.91	10.39	100 (78)
50,000–99,999 (4)	14.75	86.89	78.69	22.95	100 (62)
100,000–199,999 (5)	18.75	83.33	85.42	16.67	100 (49)
200,000–499,999 (6)	5.26	94.74	78.95	21.05	100 (57)
500,000–999 999 (7)	6.06	93.94	81.82	18.18	100 (33)
> 1000,000 (8)	19.44	83.33	61.11	41.67	100 (37)
D4					
Central (0)	15.17	85.52	80.69	20.00	100 (146)
Eastern (1)	12.90	87.10	86.45	13.55	100 (155)
Southern (2)	10.79	89.93	82.01	18.71	100 (140)
Northern (3)	12.64	88.51	86.21	14.94	100 (88)
North-west (4)	11.93	88.07	88.07	11.93	100 (109)
South-west (5)	12.90	88.71	79.03	22.58	100 (63)
E2					
Primary (0)	19.51	80.49	90.24	9.76	100 (123)
Vocational (1)	13.64	86.36	78.18	21.82	100 (110)
Secondary (2)	13.41	87.68	86.96	14.13	100 (279)
High (3)	6.91	93.62	78.72	21.81	100 (189)
F2					
< 1000 (0)	21.28	79.43	92.20	8.51	100 (142)
1000–2000 (1)	14.41	88.14	90.68	11.86	100 (121)
2000–3000 (2)	11.05	88.95	82.87	17.13	100 (181)
3000–4000 (3)	8.90	91.10	80.82	19.18	100 (146)
> 4000 (4)	8.11	91.89	72.07	27.93	100 (111)
F3					
< 10,000 (0)	21.57	78.43	87.75	12.25	100 (204)
10,000–20,000 (1)	11.67	88.33	90.00	10.00	100 (120)
20,000–50,000 (2)	7.32	92.68	88.62	11.38	100 (123)
50,000–100,000 (3)	10.71	89.29	90.48	9.52	100 (84)
> 100,000 (4)	7.65	92.35	66.47	33.53	100 (170)
Total	12.70	87.30	83.45	16.55	100 (701)

Note: variables are followed by numbers in parentheses, which means sequent subgroups.

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