

Bednarczyk, T. H., Szymańska, A., Ostrowska-Dankiewicz, A., & Silva, P. (2023). Life insurance with insurance capital funds as a form retirement savings: Determinants for the self-employed. *Journal of International Studies*, 16(3), 127-143. doi:10.14254/2071-8330.2023/16-3/7

Journal
of International
Studies

Centre of
Sociological
Research

Scientific
Papers

Life insurance with insurance capital funds as a form retirement savings: Determinants for the self-employed

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Abstract. Reduction of the public pension system generosity should encourage all future retirees to accumulate private retirement savings. They have many options in this area, both dedicated pension programs (pension pillars), and a whole range of financial market investment instruments (non-pillar solutions). The main objective of the paper was the empirical identification of factors that determine the level and propensity to save in the form of life insurance with insurance capital funds for retirement purposes by self-employed persons in Poland. The microeconomic perspective of considerations was adopted in the research process. On the basis of a review of economic literature, a set of individual characteristics that affect savings decisions of natural persons was distinguished, then an attempt was made to find out whether the same groups of factors also determined the individual decisions of self-employed persons regarding saving

Received:
January, 2023
1st Revision:
August, 2023
Accepted:
September, 2023

DOI:
10.14254/2071-
8330.2023/16-3/7

for retirement in the form of insurance capital funds. The following research hypothesis was verified: Ownership of retirement savings in the form of life insurance with insurance capital funds by self-employed natural persons in Poland is determined both by social and economic factors, and the impact of these factors varies. The empirical study showed that the accumulation of retirement savings by self-employed persons in the form of life insurance with insurance capital funds was the least important way to supplement the future pension from the public pillar. Self-employed persons are characterized by a relatively high propensity to save for retirement (higher than the average propensity to save in Poland), prefer non-pillar forms of collecting voluntary savings for retirement, primarily in the form of real estate. The strength of the social and economic factors varies.

Keywords: life insurance, insurance capital funds, retirement savings

JEL Classification: G22, G52

1. INTRODUCTION

Self-employed natural persons¹ play a dual role of both an owner and a profit worker. In practice, it is a very diverse social and professional group. On the one hand, it includes entrepreneurs who own their businesses, often cultivate family traditions, have considerable wealth, employ permanent employees, and small businesses that are a source of additional income, the so-called supplementing your remuneration or pension. On the other hand, it includes self-employed people who run their own businesses and hire no one (*solo-self-employed*). But from a formal point of view, the group of self-employed people also includes people employed in the form of B2B (Business-to-Business) contracts, which is particularly popular in such professions as: programmers and other IT specialists, testers, analysts, architects, or *project managers*. The group of the self-employed also includes initiators of innovative projects such as start-ups, as well as agents of all types of agency contracts. The advancement of digital technologies and new business models has contributed to the latest forms of self-employment and online platform work ("crowd work", "gig work" and other forms of "on-demand") work. Most of such work is carried out under non-standard forms of employment or self-employment (OECD 2020, p. 4). In Polish statistics, self-employed people are divided into those who run their own business and are employers (employing at least one employee) and self-employed workers (solo self-employed). At the end of 2021, the share of natural persons registered as self-employed in relation to the total number of people working professionally in Poland was 23%, including employers - 5.1% and non-employers - 17.9% (GUS 2022).

People working for profit show certain special features, such as: resourcefulness, diligence, consistency in action, independence, greater internal sense of control or greater propensity to take risks. Among them there are people with entrepreneurial aspirations, then their investment plans may influence their decisions regarding saving in general, including retirement savings. In the initial period, they are more focused on investments and development of their own business than on saving. However, in the period of prosperity,

¹ Traditionally, self-employment jobs are the opposite of workers in employment for pay. The 2018 International Classification of Status in Employment (ICSE-18) lists workers in employment for profit and workers in employment for pay. The term workers in employment for profit means people who are independent of another person or business unit in terms of work organization and/or market access [ILO, 2018].

when they have stable income and developed business, they are able to quickly make up for shortages in the level of long-term savings, including retirement, which is their logical and natural behavior.

Over the last 20 years, the world has seen a major change in the structure of the self-employed. In most OECD countries, the share of employers has decreased, while the share of solo self-employed workers has increased. On average, employers in OECD countries account for 1/3, while the self-employed solo constitute 2/3 of all self-employed persons (Boeri, Giupponi, Krueger, Machin, 2020, p. 174). Most of those who work for profit are self-employed by choice, i.e., because they want higher income or benefit from flexible working hours. Among the strong incentives that encourage self-employment are structural changes taking place in the modern economy, such as the development of services and cooperative forms of business activity, especially outsourcing. Self-employment also gives greater autonomy and job satisfaction and allows one to flexibly combine professional activity with family life or pursuing one's own interests (e.g. remote work from home). Other practical issues are not without significance, such as the minimum involvement of own funds, often no requirement for a separate premises, tax benefits (e.g. settlement of computer purchase costs or running costs, etc.) (Cieślak, 2019, p. 11 et seq).

But among the group of self-employed people there are also necessarily self-employed (dependent, bogus or forced self-employment). The changing labor market, forcing an increase in flexibility, means that more and more self-employed people are in fact dependent on one client, and their relations are regulated not by the labor code, but by commercial law. In fact, it is not a typical self-employment, but a hidden relationship between the employer and the employee, without being subject to the labor market regulation regime, especially with regard to the protection of employee rights. It is characteristic, however, that all self-employed persons (both by choice and by necessity) always bear the economic risk of their business activity. However, solo self-employed workers are more at risk of financial instability than entrepreneurs with employees who have stable returns and may use their business assets possibly during their retirement period. Solo workers, especially dependent workers, tend to be in a weak bargaining position. They are often forced to accept low wages, which translates into a high risk of their financial instability. At the same time, they are exposed to high social risk, i.e. insufficient social security, including pension, which results mainly from the exclusion of this category of economically active persons from employment rights and the lack of universal financial protection against the effects of accidents at work, long-term illness or unemployment, which is particularly severe in the case of self-employed dependent persons.

Self-employed persons, not only in Poland, do not have a systemically well-secured financial situation after ceasing business activity (Jongkyun Ch., 2009). Like full-time employees, they are admittedly covered by compulsory state-guaranteed pension insurance, but they pay lump sum contributions (in Poland, the declared amount of income, but not less than 60% of the average monthly salary in the economy), which are generally not correlated with their actual income². In addition, the self-employed in the initial period of running their business (in Poland for 5 years) can benefit from tax preferences and numerous concessions in paying social security contributions, including retirement benefits. This is favorable for them from the current perspective, but unfavorable from the point of view of pension entitlements from the public pillar. As a result, their retirement benefits from the public system are already negative (below the average employee benefits), and in the future this problem may worsen significantly.

One of the basic measures of the adequacy of the pension system is the replacement rate, which is the ratio of the amount of the first retirement benefit to the last received remuneration for performing work (Herbich, 2010). According to researchers, the optimal replacement rate should range from 50 (Whitehouse,

² For some small businesses this base is too high, but for many who work for profit, this base is clearly underestimated in relation to the income earned, e.g. for programmers.

2014) to even over 80% (Mercer, 2016; OECD, 2015; Munnell et al., 2014; MacDonald and Moore, 2011; Greninger et al., 2000). However, forecasts made by scientists and market research institutions show that the replacement rates in the next dozen or so years will be much lower. Estimates of the European Commission (2015) show that in 2050 the replacement rate in the general pension system will be only 31.2%. Similar values were given in their research by, among others, Jabłonowski and Muller (2014) and Góra and Rutecka (2013). This means that in practice there is a pension gap, understood as the difference between the expected and actual replacement rate (Jedynak, 2017). This creates the need to have and use private retirement savings to bridge this gap.

Self-employed persons have a much greater personal responsibility for financing their retirement pension than employees. This is evidenced by, among others, no access to pension benefits organized and sponsored by the employer (PPE, PPK). In general, they have to look after their own supplementary pension and initiate their own pension plans. In times of increasing dilemmas related to the need to collect adequate funds for retirement from additional sources, insurance capital funds are worth attention, for example due to the diversity of investing funds by people looking for the possibility of building capital for the time of old age combined with insurance coverage (Financial Stability Report, 2019).

The aim of this paper is an empirical identification of the factors that determine the level and propensity to save in the form of life insurance with the insurance capital fund for retirement purposes by self-employed people in Poland.

Life insurance with the Insurance Capital Fund as a form of accumulating and multiplying retirement savings

Scientific studies on life insurance with insurance capital funds emphasize the idea of these products, distinguished by their savings and investment character. On the one hand, they motivate individuals (the insured) to systematically set aside funds (not to consume them). On the other one, they give them an opportunity to invest a certain part of the premium in insurance capital funds, which are characterized by a different level of risk (Homa, 2017). The specific level of risk and the efficiency of investing often related to it are the subject of many scientific studies, as these are the parameters that often determine the choice of insurance as a form of saving and its perception by investors. The significance of the research, from the point of view of an individual investor (in the case of insurance capital funds it is the policyholder) clearly distinguishes the concept of efficiency, understood as the achieved profitability (rate of return), and the concept of investment risk, i.e. all factors that may cause a decrease in the value of the assets making up the fund's portfolio. Analyzes indicate some limitations of this form of saving. M. Homa (2017), while examining the effectiveness of investments, emphasizes that life insurance with the insurance capital fund should be long-term in nature, and a different level of effectiveness of insurance capital funds in pension forms was demonstrated by Dopierała and Wojciechowski (2015). The results of the research by Ostrowska-Dankiewicz (2016) show the scale of the risk and answer the question whether long-term investment in insurance capital funds brings investors a satisfactory return compared to other, less risky instruments, the so-called safe instruments.

Bearing in mind the long-term nature of this instrument and the fact that it combines insurance coverage and the possibility of saving, Kowalczyk-Rólczyńska and Pisarewicz (2015) and Dacev (2017) demonstrated that insurance with insurance capital funds was a beneficial and effective method of accumulating retirement savings. Dong et al. (2019) also wrote that insurance contributes to the improvement of the financial situation in the retirement period.

Certain tax benefits are mentioned among the main advantages of unit-linked insurance. In the case of investments in the insurance capital fund, there is no obligation to pay capital gains tax when transferring funds between funds, but only at the end of the investment. As a result, insurance capital funds seem to be

more advantageous in relation to, for instance, traditional investment funds (Cwynar et al., 2016). Moreover, the insurance capital funds are not included in the so-called inheritance estate, which exempts the heirs or beneficiaries from paying inheritance and donation tax. In addition, they are protected against bailiff enforcement up to 75% of the benefit.

However, it should be remembered that the insurance capital fund, as a form of accumulating retirement savings, faces certain obstacles, which result, inter alia, from the wave of decline in confidence in insurance companies and mass early cancellations in many countries. They are often the result of unprofessional behavior on the part of insurers and/or financial intermediaries, such as mis-selling and cross-selling (The Price of Bad Advice, 2018; Christofilou, 2014; Babula et al., 2017), or a deficit of information transparency regarding the essence of investment-related financial products (Frączek, 2017). From the point of view of life insurance with insurance capital funds, a particularly big problem turned out to be the failure to inform clients that the entire investment risk is borne by the client himself (Kościelniak, 2016), as well as the failure to inform clients about all fees related to this product, especially about high liquidation fees (Franke et al., 2016; Ostrowska-Dankiewicz, 2019), which consequently limits the development of this market segment and reduces the propensity to save in the form of insurance capital funds. It should be emphasized that there is empirical evidence that the issue of an early opt-out decision depends on the level of consumer confidence and long-term interest rates for all insurance products examined. Similar conclusions were obtained with regard to unit-linked investment life insurance. This emphasizes the importance of the issue of consumer confidence in entities operating in the financial services market (Poufina, Michaelide, 2018).

2. REVIEW OF THE LITERATURE ON THE FACTORS INFLUENCING THE SAVINGS DECISIONS OF INDIVIDUALS

In the light of the literature review it should be stated that the determinants of saving for retirement are numerous and include various factors. The results of empirical research on the determinants of household retirement savings are presented in numerous works (Ares et al., 2015; Czapiński et al., 2016; Bucholtz et al., 2021). The works examining the determinants of voluntary saving in individual pension programs (pillar III) include: (Guariglia et al., 2000; Harju, 2009; Le Blanc, 2011; Fernández-López et al., 2010; Garcia et al., 2017; Olejnik, 2016; Marcinkiewicz, 2018), which present the results of research on the identification of factors that influence the development of equity-financed voluntary pension programs, both individual and employee (synthesis of micro and macroeconomic approaches).

The factors that determine the retirement savings of self-employed persons are examined much less frequently than in the case of households (Ramnath et al., 2017; Parker et al., 2007; Bednarczyk et al., 2021). Here, as well, the basic category of factors which in empirical research turned out to be statistically significant for retirement savings were demographic factors, such as: age, family status, place of residence of the self-employed (DeVaney et al., 1997; DeVaney et al., 1998; Szczygiel et al., 2018; Krupa et al., 2016). Investment decisions also have a significant impact on the propensity to accumulate retirement savings by individual entrepreneurs, because most of their financial and tangible assets (real estate) are also assets of their enterprise. These people (and their households) are distinguished by the level of wealth compared to other working people (Gentry et al., 2000; Ketkaew et al., 2019; Ramnath et al., 2017). It should be pointed out that numerous studies identified new factors of a psychological nature that had not been studied before, such as, for example, the sense of control over one's life and savings. Self-employed workers much more often than those working for remuneration prefer pension schemes that ensure greater freedom of choice of programs and greater investment risk (Karpowicz, 2019). They are also highly susceptible to various tax breaks (Smith et al., 2014; Joulfaian 2018). They notice the increase in demand for information and are

aware that up-to-date and well-processed information is an important asset and the most important element of the decision-making process (Dankiewicz, 2020).

Another important factor that influences the propensity to accumulate retirement savings by self-employed persons turned out to be the income obtained in the course of running a business (DeVaney et al., 1997; Ketkaew et al., 2019, Rossi et al., 2016). Due to the higher risk taken and, consequently, greater volatility of earned income than in the case of working for a salary, this issue seems to be of particular interest.

The multiplicity and similarity of the factors influencing the accumulation of retirement savings by households of employees and self-employed workers allowed the formulation of the following research hypothesis. ***Ownership of retirement savings by self-employed natural persons in the form of life insurance with insurance capital funds is determined both by social and economic factors, and the strength of the impact of these factors varies.***

3. THE METHOD OF SELECTING THE RESEARCH SAMPLE

The direct survey (primary data acquisition) was carried out in December 2020, using the CAWI (Computer-Assisted Web Interview) method, on a nationwide random sample of 1,067 self-employed natural persons in Poland. The selection of the sample was representative in terms of geography (the province according to the seat of the business) and in terms of the type of business (the predominant type of business according to PKD 2007 - Polish Classification of Activities). The research frame (sampling frame) was taken from the Central Register and Information on Economic Activity (CEIDG). The study did not include people running an agricultural activity (farmers are subject to separate pension insurance rules), partners in civil law partnerships as well as freelancers, dependent contractors, dependent subcontractors and free family members.

The original, standardized, direct interview questionnaire consisting of several basic questions and a record (12 questions) was the tool applied in the research. The scope of the issues covered included in particular: planned activities aimed at increasing the standard of living in the retirement period; indicative ranges of the respondents' savings declared as retirement benefits; financial instruments in which the respondents have accumulated their private retirement savings. A more detailed description of the research sample was presented in table 1.

3.1. Sample characteristics

Table 1 presents the characteristics of the research sample taking into account, inter alia, the characteristics of self-employed people, such as: gender, age, marital status, or education, and variables directly related to the conducted activity, such as: type and duration of business, amount of income, the role of operating income in total income, the value and type of retirement savings held by respondents and the type of their plans to raise their standard of living in the event of insufficient retirement. The structure of the sample is also presented in terms of the respondents' opinions on the Social Insurance Institution (ZUS) contributions, knowledge about the pension system and assessment of their financial situation at the present and in the future retirement period. Due to the volume, the sample structure by provinces and the code list of classification of business activities (PKD) was not presented.

Table 1

Sample characteristics

Variable	N	%
<i>Gender</i>		
Male	719	67.4
Female	348	32.6
<i>Education</i>		
Primary and vocational	29	2.7
Secondary	171	16.0
Higher	867	81.3
<i>Marital status</i>		
Singles	284	26.6
Persons in relationship	743	69.6
Others (widower, widow, divorced, divorced; separated)	40	3.8
<i>Family situation</i>		
People without dependent children	590	55.3
People with dependent children	477	44.7
<i>Age</i>		
Up to 35 years old	166	15.6
36-50 years old	468	43.9
Over 50 years old	433	40.6
<i>Type of sole proprietorship:</i>		
Natural persons who are not employers (solo self-employed)	705	66.1
Natural persons employing other employees (employers)	362	33.9
<i>Years of business:</i>		
up to 5 years	241	22.6
over 5 years	826	77.4
<i>The role of business income in total household income:</i>		
only income	467	43.8
main income	368	34.5
supplementary income	232	21.7
<i>Estimated amount of monthly income from business activity in the last year:</i>		
below 2 500 PLN	164	15.4
between 2 500 PLN and 4 500 PLN	194	18.2
between 4 500 PLN and 6 500 PLN	203	19.0
over 6 500 PLN	506	47.4
<i>Self-assessment of the material situation (material property owned - real estate and other material goods):</i>		
bad	126	11.8
average	509	47.7
good	432	40.5
<i>Subjective assessment of respondents' knowledge about the pension system</i>		
no knowledge	51	4.8
low	130	12.2
average	547	51.3
high	339	31.8

<i>Actual assessment of the respondents' knowledge about the pension system</i>		
no knowledge	48	4.5
low	253	23.7
average	413	38.7
high	353	33.1
<i>Retirement planning - does the respondent think about their financial situation during the retirement period?</i>		
doesn't think at all	50	4.7
rarely	301	28.2
often	716	67.1
<i>Respondents' expectations as to the amount of the future retirement pension</i>		
excessive (over 3,000 a month)	876	82.1
realistic (from PLN 2,000 to PLN 3,000 per month)	140	13.1
without any expectations	51	4.8
<i>Respondents' expectations regarding the replacement rate</i>		
excessive (similar to or higher than pre-retirement income)	44	4.1
realistic (close to half of the pre-retirement income)	957	89.7
without any expectations	66	6.2
<i>Respondents' answers to the question "If the pension from the Social Insurance Institution was insufficient, it would be enough to achieve the desired standard of living"</i>		
I would use my own retirement savings	632	59.2
I would count on a possible inheritance or donation	38	3.6
I would still be professionally active	778	72.9
I would sell my own business assets or part of it	245	23.0
would count on the salary (or pension) of your spouse/life partner	124	11.6
I would consider renting a part of the apartment or selling it, and buying a smaller one in a different, cheaper area	258	24.2
I would expect immediate financial help from my immediate family/friends	33	3.1
<i>Form of owned retirement savings</i>		
insurance with an investment fund (insurance capital fund)	160	15.0
individual retirement account, individual retirement security account	257	24.1
collective investment funds	151	14.2
real estates	491	46.0
gold, works of art etc.	140	13.1
securities	140	13.1
bank deposits	233	21.8
investing in one's own company	284	26.6
<i>The amount of your current retirement savings (this is about accumulated funds in the individual retirement account, individual retirement security account or other investment instruments (except Social Financial Institution and Open Funded Pension))</i>		
0 PLN	262	24.6
from 1PLN to 30 000 PLN	260	24.4
from 31 000 PLN to 100 000 PLN	258	24.2
from 100 001 PLN to 200 000 PLN	124	11.6
from 200 001 PLN to 300 000 PLN	53	5.0
over 300 001 PLN	110	10.3

Source: own research

3.2. Characteristics of the respondents

Among the respondents, 67.4% were men and 32.6% women. The vast majority of the respondents (81.2%) had higher education. The average age of the respondent was 48.54 years old, and the standard deviation of the age was 25% of the arithmetic mean, which proves that there is little age variation in the study group. The dominant group of respondents are families (married people) with dependent children (41.3%).

Among the respondents under the survey, 66.1% were self-employed persons who were not employers, i.e. solo self-employed persons. The remaining respondents (33.9%) were self-employed persons who were employers, including: 28% were micro-enterprises (employing 1-9 employees), 5.9% were small enterprises (employing more than 10 employees). As many as 77.4% of the respondents have been running a business for more than 5 years. For most of the entities surveyed (43.8%), income from own business activity is their only income, for 34.5%, this income is their main income, and only 21.7% for business income is a supplementary income.

Most of the respondents (47.4%) declare that they achieve high revenues from their activities (average monthly revenues over PLN 6,500), and only 15.4% at a low level (below PLN 2,500). The rest of the respondents indicate revenues in the range of PLN 2,500 to PLN 6,500. At the same time, most of the respondents described their financial situation as average (47.7%) and good (40.5%), and only 11.8% as bad.

Opinion and knowledge about the pension system: Most respondents (83.1%) subjectively assess their knowledge of the pension system as at least average, with 51.3% as average and 31.8% as high. Only 12.2% of them believe that they have a low level of knowledge on this subject, and 4.8% admit that they do not have such knowledge at all. The self-assessment of knowledge about the pension system was then verified by asking three questions on this issue. The results show that 33.1% of respondents have high knowledge of the pension system, 38.7% medium, 23.7% low and 4.5% have no knowledge. The vast majority of the respondents (67.1%) often think about their financial situation during the retirement period, which can be considered a manifestation of retirement planning. Over ¼ (28.2%) of the respondents rarely think about it, and 4.7% do not think about it at all. Also, the vast majority of respondents (89.7%) have realistic expectations of future replacement rates as they believe their future retirement will be close to half of their current income. On the other hand, 4.1% of them have rather high expectations, as they expect benefits similar or higher than pre-retirement income. Only 6.2% of the respondents had no expectations about this.

Respondents admit that they have different planned strategies to maintain the standard of living during retirement in case the public pillar pension turns out to be too low. The respondents had the opportunity to choose more than one answer. The vast majority of them plan to remain economically active (72.9%) and use their own retirement savings (59.2%) to ensure the expected standard of living.

When first assessing the fact that the respondents declare or do not have any retirement savings, it should be stated that their propensity to save turned out to be relatively high. It was just over 75%. As for the declared amounts of voluntary pension savings currently held by them (apart from the Social Insurance Institution and Open Funded pension), it should be noted that they are not too high. Only 10% of respondents declared that they would save more than PLN 300,000 PLN, which, considering the conditions of Poland, can be regarded an amount significant from the point of view of increasing the adequacy of future pensions. The remaining 90% of respondents have relatively low retirement savings in relation to the anticipated needs in the retirement period (the estimated pension gap). Most respondents (48.6%) declared their retirement savings below 100 thousand. PLN (including 24.4% of them below PLN 30 thousand), which should be considered as very low amounts from the point of view of retirement needs. Savings between 100,000 PLN and 300 thousand. PLN was declared by only less than 17%.

The structure of savings of respondents declared as retirement benefits is diversified not only in terms of the amount, but also the type of savings. Most often, entrepreneurs declare having retirement savings in real estate, their share is 46%. The smallest share in life insurance with an investment fund, only 15.0%.

4. METHODOLOGY OF EMPIRICAL RESEARCH

The research used descriptive statistics and a logistic regression model (Field A., 2017, pp. 1115-1251) with the use of the IBM SPSS package. In a logistic regression model, the dependent variable Y is a dichotomous variable, taking the value 1 when the phenomenon is present and the value 0 when the phenomenon is not present. The probability that Y=1 is modeled. The explanatory variables can be either measurable or categorical. When introducing categorical variables into the model, they should be transformed by means of the zero-one transformation and the reference group for which the model parameter estimates are interpreted. The logistic regression model takes the form:

$$P(Y = 1) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \dots + \beta_k X_k)}}$$

The parameters of this model are estimated using the maximum likelihood method, looking for such assessments of β_j structural parameters that maximize the reliability of the sample. This model allows to estimate the so-called the odds ratio denoted by Exp (B) or OR, which determines the number of times the estimated probability of the Y phenomenon will change with an increase in X_j by one unit (for continuous variables), or it is often higher or lower in the study group in relation to the reference (for qualitative explanatory variables). The significance of the model parameters is assessed using the Wald test. The assessment of the model fit to empirical data is carried out using the Hosmer-Lemeshow test (a test verifying the fit of the model, this test is not recommended when there are qualitative variables in the model), a collective test of the model coefficients (chi-square test verifying the significance of model coefficients) and coefficients pseudo R2 Cox and Snell, pseudo R2 Nagelkerke (these coefficients indicate a better fit of the model as their value is closer to 1). The evaluation of the logistic regression model also includes the evaluation of classification properties, i.e. prognostic accuracy with the use of count R2, reflecting the accuracy of the overall model classification (the closer to 1, the better the prognostic properties of the model).

The variable explained in the logistic regression model was the respondent's declared retirement savings in the form of life insurance with UFK (insurance investment fund) - the variable assuming the value of 0 in the absence of savings, 1 in the case of savings. Potential explanatory variables and the coding of categorical variables are presented in table 2.

Table 2

Variables introduced into the model and variable coding

<i>Variable</i>	<i>CODING</i>
<i>Declaration of having retirement savings in the form of life insurance with insurance capital funds</i>	0 – does not have 1 – has
<i>Gender</i>	0- female 1 - male
<i>Education</i>	1 – primary and vocational 2 – secondary and higher
<i>Marital status</i>	1 – singles 2 – persons in relationship 3 - others
<i>Family situation</i>	0 – persons with dependent childred 1 – persons without dependent children
<i>Respondent's age</i>	1 – up to 35 years old 2 – 36 – 50 years old

	3 – over 50 years old
<i>A type of sole proprietorship</i>	1 – solo self-employed 2 – self-employed workers who are employers
<i>Years of running your own business</i>	1 – up to 5 years old 2 – over 5 years old
<i>The role of income from economic activity in total income</i>	1 – only income 2 – main income 3 – supplementary income
<i>Estimated amount of monthly revenues from business activity in the last year</i>	1 – below 2500 PLN 2- 2500 - 4500 PLN 3 - 4500 - 6500 PLN 4 - over 6500 PLN
<i>Self-assessment of the material situation (property owned - real estate and other material goods)</i>	1- bad 2- average 3 - good
<i>Subjective assessment of knowledge about the pension system</i>	1 – no knowledge and low 2- average 3- high
<i>Actual assessment of objective knowledge about the pension system</i>	1- no knowledge (no positive answer to any question) 2- low (positive answer to 1 question) 3 – average (positive answer to 2 questions) 4 – high (positive answer to 3 questions)
<i>Retirement planning - does the respondent think about their financial situation during the retirement period?</i>	1 – doesn't think at all 2 – rarely 3 – often
<i>Future pension expectations</i>	1 - excessive 2 – realistic 3 – no expectations
<i>Replacement rate expectations</i>	1 – excessive 2 – realistic 3 - no expectations
<i>If the pension from the Social Insurance Institution turned out to be insufficient, I would use my own pension savings to achieve the desired standard of living</i>	0 – no 1 - yes
<i>If the pension from the Social Insurance Institution turned out to be insufficient, I would count on a possible inheritance or donation to achieve the desired standard of living</i>	0 – no 1 - yes
<i>If the pension from the Social Insurance Institution turned out to be insufficient, I would still be professionally active to achieve the desired standard of living</i>	0 – no 1 - yes
<i>If the pension from the Social Insurance Institution turned out to be insufficient, in order to achieve the desired standard of living, I would sell the assets of my own company (own business) or a part of it</i>	0 – no 1 - yes
<i>If the pension from the Social Insurance Institution turned out to be insufficient, then to achieve the desired standard of living, I would count on the remuneration (or retirement pension) of my spouse / life partner</i>	0 – no 1 - yes
<i>If the pension from the Social Insurance Institution turned out to be insufficient, then in order to achieve the desired standard of living, I would consider renting a part of the apartment or selling it, and buying a smaller one in another, cheaper area</i>	0 – no 1 - yes
<i>If the pension from the Social Insurance Institution turned out to be insufficient, in order to achieve the desired standard of living, I would expect immediate financial assistance from my immediate family/ friends</i>	0 – no 1 - yes
<i>Retirement savings on individual retirement account and individual retirement security account</i>	0 – no 1 - yes
<i>Retirement savings collective in investment funds</i>	0 – no 1 - yes
<i>Retirement savings in real estates</i>	0 – no 1 - yes
<i>Retirement savings in gold, works of art etc.</i>	0 – no 1 - yes
<i>Retirement savings in securities</i>	0 – no 1 - yes
<i>Retirement savings in bank deposits</i>	0 – no 1 - yes

Retirement savings in a form of investing in one's own company	0 – no 1 - yes
The amount of your current retirement savings (this is about accumulated funds in the individual retirement account, individual retirement security account or other investment instruments (except Social Financial Institution and Open Funded Pension)	1 - 0 PLN 2 - from 1 PLN to 30 000 PLN 3 – from 31 000 PLN to 100 000 PLN 4 – from 100 001 PLN to 200 000 PLN 5 - from 200 001 PLN to 300 000 PLN 6 - over 300 001 PLN

Source: own research

5. DISCUSSION OF THE TEST RESULTS

5.1. Logistic regression results

Using Wald's test, statistically insignificant variables were eliminated from the model. The results of the estimation of the model taking into account only statistically significant variables are presented in table 3. The assessment of the fit of the model and its classification properties allows one to conclude that the model is a good fit. The collective test of model coefficients (Omnibus Test of Model Coefficients) indicates the statistical significance of at least one of the explanatory variables (p-value equal to 0), Nagelkerke's R² indicates that the model explains 22.9% of the variance of the dependent variable. As there are qualitative variables in the model, the results of the Homer and Lemeshow test do not give the correct assessment of the model. When assessing the quality of the classification, count R² is 85%, which means that 85% of the independent variables explain the variability of the dependent variable.

The results of the model estimation are presented in table 3. The following predictors turned out to be statistically significant in the model: education, age, family situation, the amount of income, financial situation, self-assessment of knowledge about the pension system, the assumed strategy of entrepreneurs in case the pension from the Social Insurance Institution turns out to be insufficient and the co-ownership of other forms of pension savings.

The results of the estimation of the parameters of the logistic regression model indicate that such social factors as: **education, family situation and age of the respondent** are *ceteris paribus* significantly related to the chance of an entrepreneur having retirement savings in the form of insurance capital funds. People with secondary and higher education are 2.2 times less likely to have savings in the form of life insurance with a capital fund than people with primary education. Self-employed workers without dependent children are 1.3 times more likely to earn such savings than those with dependent children. Based on the model's results, it can be concluded that people aged 36 to 50 have 3.7 times less chance of having retirement savings in the form of insurance capital funds than entrepreneurs aged up to 35. The chance of having life insurance with an investment fund increases by 1.5 times for respondents over 50 years of age. Therefore, the social stimulants of having retirement savings in the form of life insurance with insurance capital funds by self-employed persons are: **age over 50 and no dependent children.**

Table 3

Estimation results of the logistic regression model - retirement savings of entrepreneurs

Variable	B	Standard error	Wald	df	Significance	Exp(B)
<i>Education</i>						
Secondary and higher	-0.795	0.362	4.827	1	0.028*	0.452
<i>Family situation</i>						
People without dependent children	0.292	0.119	6.009	1	0.014*	1.339
<i>Age</i>						
36-50 years old	-1.333	0.217	37.824	1	0.000***	0.264
over 50 years old	0.434	0.128	11.533	1	0.000***	1.544
<i>Estimated amount of monthly income from business activity in the last year</i>						
between 2 500 PLN and 4 500 PLN	0.515	0.230	4.996	1	0.025*	1.674
between 4 500 PLN and 6 500 PLN	0.878	0.225	15.309	1	0.000***	2.407
over 6 500 PLN	0.830	0.205	16.385	1	0.000***	2.293
<i>Self-assessment of financial situation</i>						
average	-0.596	0.261	5.213	1	0.022*	0.551
good	0.348	0.119	8.530	1	0.003***	1.416
<i>Subjective assessment of knowledge about the pension system</i>						
average	0.863	0.190	20.547	1	0.000***	2.371
high	0.888	0.201	19.468	1	0.000***	2.431
If the pension from the Social Insurance Institution turned out to be insufficient, I would use my own pension savings to achieve the desired standard of living	-1.790	0.154	135.392	1	0.000***	0.167
If the pension from the Social Insurance Institution turned out to be insufficient, I would still be professionally active to achieve the desired standard of living	-0.367	0.125	8.572	1	0.003***	0.693
If the pension from the Social Insurance Institution turned out to be insufficient, in order to achieve the desired standard of living, I would sell the assets of my own company (own business) or a part of it	0.596	0.139	18.433	1	0.000***	1.814
Retirement savings in investment funds	-0.816	0.127	41.511	1	0.000***	0.442
Retirement savings in real estate	0.386	0.113	11.558	1	0.000***	1.471
Retirement savings on bank deposits	0.374	0.129	8.356	1	0.004***	1.453
constant	-2.485	0.497	25.022	1	0.000***	0.083
N	1067					
Cox i Snell's R-squared	0.131					
Nagelkerke's R-squared	0.229					
Homer-Lemeshow (p-value)	0.641					
Percentage of valid classifications in total	85.0					
Percentage of valid classifications 0	98.2					
Percentage of valid classifications 1	10.0					

Markings: *** - variables significant for $p < 0.005$, ** - variables significant for $p < 0.01$, * - variables significant for $p < 0.05$

Source: own study with the use of IBM SPSS Statistics based on own research

On the basis of the estimation results, the following factors of economic nature, significantly related to the possession of retirement savings in the form of life insurance with insurance capital funds, include: **monthly income, self-assessment of the financial situation, and other forms of retirement savings.**

In the case of respondents generating monthly income from PLN 2,500 to PLN 4,500, the chance of having savings in the insurance capital funds increases 1.7 times. For those with revenues from PLN 4,500 to PLN 6,500 - the chance of having savings in the insurance capital funds increases 3.7 times. For those earning revenues over PLN 6,500 - this chance is 1.5 times greater than for those achieving revenues below PLN 2,500.

Another statistically significant factor that influences the accumulation of retirement savings by people working for profit is the **self-assessment of their own financial situation.** In the case of respondents assessing their financial situation as average - the chance for such savings increases 1.8 times compared to those who evaluate their situation as bad. For respondents who consider their financial situation as good - the chance for savings in insurance capital funds decreases 1.4 times, assuming that the other factors are at the same level.

The estimation results also indicate that the chance of having savings in the form of insurance capital funds decreases 2.3 times if the respondents have retirement savings in investment funds, and increases 1.5 times if they invest their capital in real estate and bank deposits.

To sum up, the economic stimulants of having retirement savings in the form of life insurance with an investment fund by the self-employed are: **monthly income above PLN 2,500 and an average assessment of the situation. Also having savings in the form of bank deposits and real estate has a stimulating effect.**

The study showed that entrepreneurs' self-assessment of their knowledge about the retirement system is also a stimulant for retirement savings in the form of unit-linked funds. Among entrepreneurs evaluating their knowledge on this subject as average and high, the chance of having retirement savings increases 2.4 times compared to those who, in their own opinion, do not have such knowledge or have it at a low level.

Another statistically significant factor influencing the possession of retirement savings in the form of insurance capital funds is **the variable concerning the strategy of proceeding in the event that the retirement pension from the Social Insurance Institution turns out to be insufficient.** Respondents who believe that in such a case they will have to use their own retirement savings or extend their professional activity, invest in insurance capital funds, respectively, 5.9 and 1.4 times less frequently. The chance for saving in the form of insurance capital funds increases 1.8 times in the case of respondents who, in the event of insufficient funds from the Social Insurance Institution, plan to sell their own company's assets.

6. SUMMARY AND FINAL CONCLUSIONS

The results of the study and statistical analyzes show that the determinants of saving self-employment in the form of life insurance with insurance capital funds only slightly differ from the determinants shaping the total retirement savings of this social group, identified in the earlier study (Bednarczyk et al., 2021). It turned out that there are no differences regarding such social factors as age and family situation. In the case of saving in the form of life insurance with insurance capital funds, education also turned out to be a statistically significant determinant (it turned out to be statistically insignificant in the previous study). The current analysis did not confirm, as in the case of the previous study, the influence of gender on pro-savings attitudes in life insurance with insurance capital funds. It also turned out that there are no differences in terms of such economic factors as: revenues, subjective assessment of the financial situation and the role of income from business activity in total income. In the case of saving in the form of life insurance with insurance capital funds, having retirement savings in the form of bank deposits and real estate also turned

out to be a statistically significant determinant (in the previous study this variable turned out to be insignificant).

Summarizing, the following conclusions can be drawn from the study.

1. Accumulation of retirement savings by self-employed persons in Poland in the form of life insurance with insurance capital funds is the least important way to supplement the future retirement pension from the public pillar. Only 15% of the respondents declared having retirement savings in this form.

2. Self-employed persons are characterized by a relatively high propensity to save for retirement (higher than the average propensity to save in Poland), prefer non-pillar forms of collecting voluntary savings for retirement, primarily in the form of real estate.

3. Ownership of retirement savings by self-employed persons in the form of life insurance with insurance capital funds is determined by similar social and economic factors as in the case of retirement savings in this social group in general.

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