

AN ATTEMPT TO MEASURE AND MODEL WOMEN'S ATTITUDES TO SAVING FOR RETIREMENT

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Abstract

Research background: Because of the convergence of demographic, political, and economic trends, retirement has become a significant stage of human life, which currently requires thoughtful and careful planning. Therefore, social pension schemes – a type of system under which the benefits are being provided – and women's individual saving decisions should give consideration to the fact that it is necessary to accumulate additional funds which should be sufficient for several decades after retirement.

Purpose: Social pension schemes are widely discussed in all European countries, and in this context we can pose the following question: What is it exactly that makes women save for retirement? This paper has two objectives: to identify the factors that encourage women to save and to measure these factors and develop a model which shows correlations.

Research methodology: A questionnaire survey was used for collecting the primary data. Subsequently, the analysis is based on 4 indexes created for the purposes of this paper. Then, the indexes were estimated on the basis of the unidimensional two-parameter IRT model, rho and CR coefficients, and multiple-group logistic regression analysis.

Novelty: The conducted calculations lead to the conclusion that regardless of age, several factors are statistically significant for the whole analysed group, e.g. a place of residence. This is the first paper that shows determinants important for women when it comes to saving for retirement.

Keywords: saving for retirement, women, household savings, pension system

JEL classification: G4, G5, H3, I31

Introduction

One hundred years ago retirement surveys concerned only men. Women were considered only as the spouses of retired men. This trend, as S. Wright and A.K. Soutter (2015) state, reflected the then social norms which made women financially dependent on men, giving them minimal economic freedom. This situation was changed by two factors: women's easier access to education, and 20th century wars, which engaged men in military operations, enforcing women to take over their workplaces. This trend was followed by changes in legislation, granting women social and political rights, including those related to the labour market. For example, the Polish pension system relies on mandatory contributions (the pay-as-you-go system), and its philosophy is based on the principles implemented in Germany in the 1880s by Otto von Bismarck. The system was effective in German society in which life expectancy was 45 years, and pensions were paid out after reaching the age of 70, but such a system is not reliable in societies with a greater share of pensioners. Moreover, retirement models keep changing – workers can retire and return to the labour market several times (Warner et al., 2010).

Currently, retirement is less related to formal procedures (reaching retirement age) in favour of men's and women's individual decisions. In this context, it should be noted that the economic situation of retired women has become a significant issue in the policies of many countries, a serious social problem, and a personal dilemma for women. It relates to life expectancy for people aged 65, which, for example, in the United States is 18 years for men and 21 for women, representing an average increase by 5.5 years compared with the year 1950 (Sharpe, 2020). Europe represents a similar case – according to Eurostat, the average EU inhabitant aged 65 in 2018 had a life expectancy of 20 years (Labour market statistics, Eurostat). A lifespan can even be longer - 25% of individuals aged 65 will live longer than 90 years, while 3% of men and 6% of women are likely to reach the age of 100 years (Munnell, 2017).

The fact that the life expectancy of women is longer enforces pension schemes and women to consider the levels of their retirement savings. This issue is given much attention in all European countries. Therefore, we should pose the following question, being the motivation for writing the paper: what makes women save for retirement? Obviously, this question can be reversed: what prevents women from saving? In connection with these questions, the paper sets out two research goals: **(1) to identify the factors that encourage women to save, and (2) to measure these factors and develop a model which shows correlations between selected variables (e.g. income) and the propensity to save.** Because it is an exploratory study, we do not put forward any hypotheses, but we intend to identify possible correlations.

In everyday literature, both Polish and international, there are many studies on the issue of saving for retirement. This means that it is an important and current social problem. However, most often these publications are not of a scientific nature and do not show the relationship between the age of women and various determinants that interfere with (or help with) saving, therefore we believe that our work to some extent fills the existing empirical research gap. In this paper, we show not only opinions on saving by women, but we also build a model showing the relationships between indices (conditions) and women's behaviour regarding saving.

1. Literature review

Berkovitch and Manor (2019) stress that until recently retired women, and women saving for retirement, were not generally considered in research studies either from the perspective of the retirement process or in the context of women's rights. Some researchers ignored women because they claimed that a career was not of crucial importance to their lives, and, consequently, retirement was not, either. Other authors focused on working women of reproductive age, so older (retired) women who were not engaged in childcare were not given much attention in research studies. The situation of women has changed a lot recently, and the scope of research of employment and retirement became wider because of women's presence in labour markets (Warner *et al.*, 2010; Lewandowska-Gwarda, 2018).

Over the last few decades most countries of the world have faced the problem of aging societies, and according to demographic forecasts, natural growth is likely to decline, which will be accompanied by considerable changes in age structure. Lastly, the entire territory of the OECD (comprising 37 highly advanced and democratic countries) has recorded a 40% increase in the number of the population at the age of or over 65 years, and this share is expected to increase by approx. 1.6% annually. D.L. Sharpe (2020) states that this trend is recorded in many countries of the world, not only in OECD member states. Sharpe also points out that the convergence of demographic, political, economic and social trends has transformed retirement into a significant period of human life, requiring thoughtful and careful preparation at a much earlier stage of life than undertaken by most people. P. Profeta (2002) considers the impact of the process of the aging of the population on retirement and the correlation between aging and the retirement age. In her opinion, these issues are of key significance to current disputes concerning social security issues. A country's retirement policy is one of the indicators of its work force structure and a social security system. In this context, the aging of society is a significant phenomenon which should be considered in social policies. Tabellini (2002), L. Hospido and

G. Zamarro (2014) stress that increasing life expectancy and unsatisfactory levels of public pensions have resulted in prolonging the retirement age in a number of countries. For example, in the United States the retirement age has been raised from 65 to 67. Similar trends are observed in Europe: the prolonged retirement age for both genders has been introduced in Germany (67), Norway (67), and the UK (68). From October 1, 2017, the retirement age in Poland was set at 60 for women and 65 for men, which is one of the lowest in Europe. It means that citizens can retire fairly quickly. The statutory retirement age is the result of a political decision that is sanctioned as applicable by law. Upon reaching the statutory retirement age, employees have the right to receive an old-age pension. Although it is up to them to decide whether they actually retire or whether they want to continue working (Matus, 2022).

Many publications (i.e. Ekerdt, 2009; Gillen, Heath, 2013; Jedynak, 2016) describe that retirement can be the effect of various factors including the change of life priorities, child care responsibilities, health problems or other problems related to old age, as well as marital status. An interesting fact is, that retirement frequently reflects cultural patterns related to old age, for example the Hindu model of abandoning the mundane concerns of day-to-day life, or the European model of taking care of grandchildren (Rogers, Rose, 2019). However, a comfortable way of retiring is conditioned by the availability of a substitute income replacing the hitherto compensation.

The retirement process can be considered from different perspectives – an employer, an employee, or a married couple when one of the spouses retires. Szinovacz (1989) notes that spouses tend to retire together, although this is not always the case. It turns out that when couples retire at the same time, it is the wife who adapts to her husband's time of retirement. Women, then, retire earlier, even without ensuring their full retirement benefits. Moreover, the financial decisions of households, including those concerning old age savings, are largely influenced by marital status – married people are usually richer and have more savings (Kapounek *et al.*, 2016).

Retired people change their household roles. When both spouses retire, husbands tend to become more engaged in household responsibilities. This issue is undertaken by Caltabiano, Campolo and Di Pino (2016), who stress that working women dedicate more time to housework, but when both spouses retire, husbands become more engaged. Therefore, a key measure of the effectiveness of a pension scheme, which is a type of scheme under which the benefits are being provided (OECD 2013), is its ability to mitigate the risk of women's poverty. This is a real threat – women's retirement is longer, while their benefits are lower (Unton, 2021).

As mentioned, a significant problem faced by women is their work compensation. Spratlin and Holden (2000) note that parental gender roles decrease women's productive age as well as an influence on retirement income. Statistically, gender pay gaps in most countries are being narrowed. However, in the EU, for example, this gap ranges from 5% in Luxembourg, Italy and Romania to more than 19% in Austria, Germany, Latvia and Estonia. Undoubtedly, the pay gap translates to pension scheme contributions and the levels of future pensions. Another factor that has a negative impact on the level of pensions is the work for which women do not get any compensation. This issue was undertaken by J.A. Sugar (2015), who claims that the word "worker" is associated by most people with an employee who receives compensation. However, women are not paid for most of their work, so it is not recognised or defined as work. Moreover, women often face increasing discrimination in the workplace, which is reflected in lower than average pay and the lack of promotions, resulting in reduced financial resources and retirement benefits. It is often stressed that women can retire early, and it is a form of compensation for their unpaid work. However, there is a trend to introduce the same retirement age for genders. The same retirement age is practiced in such countries as Austria, Belgium, Cyprus, Croatia, Portugal and Switzerland. Women can retire early only in a few countries including Albania, Belarus, Moldova, Poland and Russia (Solov'eva *et al.*, 2015). It can be concluded that employment cycles are different depending on gender, and women's employment cycle is differentiated by the existence of gaps in the employment period.

It can be expected that people who reach retirement age make their decisions based on their individual convictions – those who retire early believe that it is beneficial. The decision to retire results from individual life experience, so – as Damman *et al.* (2015) state – it can be affected by a number of factors. It should be noted that people do not always retire as a result of reaching the relevant age – it happens that work performed by older people is a standard, and some of them work as long as they live (Kinsella, Phillips, 2005). It is characteristic of agricultural jobs (especially family farms), small private firms, or life-long jobs in religious institutions (e.g. Hachan in Karaism or Mufti in Islam). Retirement is an optional social practice which provides financial security for people who are not active on the labour market (Solem *et al.*, 2016).

Undoubtedly, retirement implies the loss of a major role in human life and the source of people's identity – "who am I?" Work, however important it is, is not the only indication of social roles and identity – an equally significant role is played by relationships with families and friends. Therefore, the significance of such relationships increases upon women's retirement, providing a form of compensation for the loss of career, which is discussed by Anson

et al. (1989) in the article 'Family, Gender, and Attitudes Toward Retirement'. Lumsdaine and Vermeer (2015) show that women's retirement decisions are mainly affected by such financial factors as current earnings, pension levels and retirement insurance. It confirms the principles of traditional pension schemes which do not consider such non-financial factors as unpaid care work. Also, medical conditions and disabilities increase the likelihood of retirement, which also applies to the situation in which a spouse has a disability or is retired. In addition to that, people who have grandchildren are more likely to retire.

In Poland, despite the common conviction about low ZUS pensions (Social Insurance Institution) people show little interest in additional saving for retirement, and choose well-known but unprofitable financial products. The results of 2020 research studies indicate that as many as 75% of Poles save for the future, which is good news, especially that most of them are regular savers (Skwirowski, 2020). However, women start saving too late. Young people treat retirement as something remote and abstract. They are focused on day-to-day expenses and plans – the purchase of a flat, starting a family or having children. When people get older and reach the stage of stability, they become more concerned about decent retirement, and their actions are determined by adopted attitudes to life: being passive or precautionary (Motywacja do oszczędzania, 2020). Most studies on saving compare women and men - it is known that men are more active, show greater willingness to risk, so they can earn more from investments and save for the future (Walczak, Pieńkowska-Kamieniecka, 2018). Our publication gathers the current knowledge on pensions solely for women and shows a new model approach, which has not been found in the literature yet, as explained in more detail in the methodology.

2. Research methodology

The empirical data analysed in this paper originates from an online survey conducted between May 2018 and December 2019 on a target sample of 843 respondents – women at the age of 18–60 living in Poland. Information about the study was posted on social media and every woman could take part in it, therefore, survey participants come from all over the country. The participation of women was voluntary and did not involve any compensation or benefit. It should be noted that although the research sample is large, its structure does not fully correspond to the real age structure of women in Poland, which should be taken into account when drawing conclusions.

The structure of the study sample is as follows:

- a) age: 42.9% of respondents aged 18–30 years, 33.9% – 31–45 years, 23.2% – 46–60 years;
- b) place of residence: 80.4% of respondents live in cities;
- c) income: 45.5% of respondents earn up to 2,000 PLN net; 39.5% – from 2,001 to 4,000 PLN, 15% – more than 4,000 PLN;
- d) employment: 81.5% of respondents at the time of the research had jobs or ran their own business (2.8%); 52.6% had an employment contract for an indefinite period;
- e) duration of employment: 39.8% of respondents – up to 5 years; 38.5% – 6–20 years; 21.6% – more than 20 years;
- f) household size: single family – 15.1%; 2-person family – 33.7%, 3-person family – 26.1%, family of 4 and more – 25.1%.

The surveyed women answered 14 questions related to their employment, knowledge about saving, opinions on possible pension levels, and their financial condition upon retirement. The questions concerned also the current employment, type of contract concluded, professional experience, as well as knowledge about the pension system, the size of the potential pension and knowledge about additional savings. In this study the currency ‘Polish zloty’ was used, which had a value of 0.2182 EUR, according to the NBP average exchange rate of 6.05.2021; at that time, the average salary in Poland was 5682,97 PLN, which was the equivalent of 1,239 EUR. The obtained results allow for developing the following **indexes representing latent variables**: job stability index (JSI), media diversity index (MDI), personal inertia index (PII), and external support index (ESI). They are estimated on the basis of the unidimensional two-parameter IRT model (*item response theory*). Reliability assessment is based on rho and CR coefficients. The obtained indexes are subjected to a multiple-group logistic regression analysis aimed to explain the impact of the above indexes on the propensity for additional saving among the particular women’s age groups (age is incorporated into the regression model as a moderating variable).

3. Measurement models for women’s saving

The modelling of women’s additional economic activities is based on the following factors: job stability, the scope of information received, personal propensity to save, other factors related to saving. Consideration is also given to such demographic characteristics as age, income, place

of residence, and the number of people in a household. Generally, the structure of indexes was built on the basis of logical factors conditioning a given behaviour, as detailed below:

1. **Job stability** is measured using the **job stability index (JSI)**. It represents a standardised index of weighted assessments comprising the following factors:

- The fact of being employed (yes – 1 point, no – 0 points).
- Type of employment: (no employment contract – 1 point, contracted work – 2 points, a limited contract – 3 points, an unlimited contract – 4 points, own business – 5 points).
- Duration of employment (0–5 years – 1 point, 6–10 years – 2 points, 11–20 years – 3 points, 21–30 years – 4 points, more than 30 years – 5 points).

The higher the value of the index, the higher the level of women's job stability.

2. **The range of information** received by women is measured by the **media diversity index (MDI)**, representing the sum of items related to the knowledge of the sources of information about pension schemes. It represents a standardised index of the sum of assessments related to the use of the following sources of information:

- television (yes – 1 point, no – 0 points),
- press (yes – 1 point, no – 0 points),
- Internet (yes – 1 point, no – 0 points),
- leaflets (yes – 1 point, no – 0 points).

The higher the value of the index, the higher the level of perceived media diversity (the sources of information about pension schemes).

3. **Individual propensity** to save is measured on the basis of the **personal inertia index (PII)**, which comprises 8 items describing the factors that delay saving for retirement or the need to do it:

- household expenses are too high,
- conviction that it is too early to think about retirement,
- lack of conviction about the need to save,
- lack of knowledge about saving,
- conviction that saving is the partner's/spouse's responsibility,
- fact of being sufficiently wealthy.

Because of the coefficient-based character of questions, the inertia index is developed using the unidimensional two-parameter IRT model (*item response theory*). The items indicating the lack of propensity to save are ordered according to the parameters of difficulty from the easiest (the highest likelihood of choice) to the most difficult (the lowest likelihood of choice).

The items indicating the highest parameters of discrimination refer to the assessment of time to retirement (items 2, 3 and 5). The parameters of the model are presented in Table 1.

Table 1. Parameters of difficulty and discrimination of the personal saving inertia index

Item	Coefficient of difficulty	Coefficient of discrimination
1. Too much expense	-0.473	0.128
2. Too early to think about it	-2.075	3.060
3. Retirement is still a long way off	-2.273	2.368
4. Lack of conviction about the need to save	-1.728	0.432
5. I am not retired yet	-2.264	1.241
6. Lack of knowledge about saving	-2.065	0.805
7. Saving is my partner's responsibility	-3.119	0.280
8. Being wealthy	-5.564	-0.311

Source: author's research.

This set of items resulting from the two-parameter IRT model is at a low level of reliability. The coefficient of empirical reliability is 0.516, and marginal reliability is at the level of 0.502. For this scale, Guttman's CR coefficient has the value of 0.83. It is slightly different than in the case of the saving inertia index, but this value can be regarded as acceptable. The factor values determined by the model allow for estimating the standardised support index.

Reliability analysis is based on rho (Thissen, Wainer, 2001):

$$\rho = 1 - \sigma_{\theta}^2 \quad (1)$$

where σ^2 – variance of the estimation error of standardised factor values q .

The reliability of this tool is at a low acceptance level. The empirical coefficient of reliability based on the estimated error variances is 0.516, while reliability estimated on the basis of the parameters of the two-parameter IRT model is at the level of 0.512. Considering the exploratory character of cumulative ratios, CR (*coefficient of reproducibility*) is also calculated for Guttman's deterministic model, which amounts to 0.855.

$$CR = 1 - \frac{B}{P \times R} \quad (2)$$

where:

B – number of Guttman errors (the number of positive answers to (1) statement “difficult” and negative answers (0) to statement “easy”),

P – number of items,

R – number of respondents.

For cumulative items the coefficient of reproducibility above 0.8 can be recognised as acceptable. The factor values determined by IRT allow for estimating the standardised saving inertia index.¹

4. **The external factors** related to propensity to save are measured using the **external support index (ESI)**, which comprises the sources of support for women who save for retirement (what women need to save). The index is composed of five components:
- more information about pension levels,
 - more information about investment opportunities,
 - more information from ZUS (Social Insurance Institution),
 - spouse's support,
 - children's support.

Similarly to the saving inertia index, the support index is based on a one-dimensional two-parameter IRT model. The use of the model leads to the ordering of items based on the parameters of difficulty: from the easiest (the highest likelihood of choice) to the most difficult (the lowest likelihood of choice). The items characterised by the highest parameter of discrimination refer to the assessment of the sources and reliability of information (items 1, 2 and 3). The parameters of the model are presented below in Table 2.

Table 2. Parameters of difficulty and discrimination of the support index

Item	Coefficient of difficulty	Coefficient of discrimination
1. More information about pension levels	–0.337	2.015
2. More information about investment opportunities	–0.441	1.011
3. More information from ZUS (Social Insurance Institution)	–0.507	1.194
4. Spouse's support	–2.659	0.285
5. Children's support	–3.210	0.004

Source: author's research.

¹ From a formal point of view, IRT models are the basis for developing one-dimensional models of cumulative scales. Considering the obtained level of reliability, the estimated values of latent variables in IRT models are the basis for developing indexes – not scales.

4. Logit models of women's decision to save for retirement

The analysis of correlations between the identified factors which influence saving decisions and the propensity to save is based on multi group logistic regression. The function of the grouping variable is performed by three women's age groups (18–30 years, 31–45 years, and 46–60 years). Independent variables are as follows: income (up to 1,500 PLN, 1,501–2,000 PLN, 2,001–4,000 PLN, and above 4,000 PLN), the number of household members, place of residence (rural, urban), job stability index, media index, saving inertia index, and support index. The dependent variable is the propensity to save for retirement (measured by a binary variable – yes (1), no (0)). For each estimated model in age sub-groups the selection of diagnostic independent variables is based on the best subset selection method and the Akaike information criterion (AIC). It allows for assessing the set of optimal predictors for the particular age groups. Independent categorical variables such as age, place of residence and income are incorporated into the model as dummy variables, where the reference category for subsequent variables is age “46–60 years”, “rural”, and income “above 4,000 PLN”. Table 3 presents the values of the quotient of odds ratio for the base model (population sample).

Table 3. The values of the odds ratio for the base model

Effect	Reference level	Odds ratio
y-intercept	–	
ISP	–	0.813
IRM	–	1.625*
IOI	–	0.021*
IZW	–	1.924*
Age	18–30	0.697
Age	31–45	1.386
Place of residence	city	0.529*
Income	1,501–2,000** PLN	0.159*
Income	Up to 1,500 PLN	0.133*
Income	2,001–4,000 PLN	0.253

* statistically significant estimations for significance level $\alpha = 0.05$.

** 1 PLN = 0.2182 EUR, according to NBP average exchange rate of 06.05.2021.

Source: author's research.

The analysis of parameters indicates that the propensity to save, **in a statistically significant way**, depends on the media index, the support index, and the inertia index, as well

as a place of residence and income below 2,000 PLN (Table 3). Income within the range 1,501–2,000 PLN lowers the chance to save by 84.1% as compared with income above 4,000 PLN, and income up to 1,500 PLN lowers this chance by 86.7% as compared with income above 4,000 PLN (the equivalent of 872.80 EUR). A place of residence in a city lowers the chance for additional saving by 47.1% as compared with the inhabitants of rural areas. An increase in IRM by one unit increases the propensity for additional saving by 62.5%, and an increase in IOI by one unit lowers the propensity to save by 97.9%.² An increase in IZW by one unit increases the chance for additional saving by 92.4%. The R^2 Cox-Snell coefficient for the model is 0.469, and Nagelkerke's R^2 is equal to 0.625 (Nagelkerke R-Squared is an adjusted version of the Cox-Snell R-Squared). The lower value of the Cox-Snell pseudo R^2 results from the lack of the normalization of the coefficient, whose maximum value (for the best model) can be lower than a unit (hence the lower value of the coefficient does not indicate a worse fit as compared with the normalised coefficient. The value of the Hosmer-Lemeshow test is 135.036 ($p = 0.000$). It implies the rejection of the hypothesis³ about the equality of the observed and predicted values and not a very good fit of the model. It should be noted, however, that the H-L test is strongly dependent on the number of groups (usually 10), and it does not consider model specification errors (Hosmer-Lemeshow Test).

The analysis of age sub-groups points to moderating effects related to the impact of age on the correlations between independent variables and propensity for additional saving. Table 4 presents the values of the odds ratio for women aged 18–30 years. For this age group, key variables identified on the basis of the Akaike criterion include the following: place of residence and ISP, IRM and IOI indexes. On the basis of the model it can be assumed that the propensity to save is determined by individual saving inertia, job stability and place of residence. Residence in cities lowers the chances for additional saving among young women by 84.8% compared with the inhabitants of rural areas. An increase in the job stability index by a standardised unit leads to a sevenfold greater chance for additional saving, and an increase in the saving inertia index by one unit results in a decrease in the propensity to save by 99%.

Attention should be given to the significant impact of job stability on additional saving for retirement among younger women. The Cox-Snell R^2 coefficient is equal to 0.593, and Nagelkerke $R^2 = 0.790$. The value of the Hosmer-Lemeshow test is equal to 1567.493 ($p = 0.000$). It points to the rejection of the hypothesis on the equality of the observed and predicted values,

² In each adopted standardised index an increase in value by one unit indicates an increase in value by one standard deviation of a given measure.

³ Here: a formal and statistical hypothesis.

and, consequently, not a very good fit of the model. Table 5 presents the values of the odds ratio for women aged 31–45 years. For this age group, key variables identified on the basis of the Akaike criterion include the following: place of residence, the number of household members, and IZW, IRM and IOI indexes.

Table 4. The values of the odds ratio for women aged 18–30 years

Variable	Reference level	Odds ratio
Place of residence	city	0.162*
ISP	–	7.185*
IRM	–	1.319
IOI	–	0.010*

* statistically significant estimations for significance level $\alpha = 0.05$

Source: author's research.

Table 5. Odds ratios for women aged 31–45 years

Variable	Reference level	Odds ratio
Place of residence	city	0.229*
IZW	–	2.137*
IRM	–	1.938*
IOI	–	0.012*
Number of household members	2 persons	0.231
Number of household members	3 persons	0.130*
Number of household members	4 and more persons	0.114*

* statistically significant estimations for significance level $\alpha = 0.05$.

Source: author's research.

The data shows that residence in cities lowers the chance for additional saving among middle-aged women by 79.1% compared with the inhabitants of rural areas. An increase in the support index by one unit results in a twofold increase in the chance for additional saving, and an increase in the media index leads to a 93.8% increase in the chance for additional saving. An increase in the saving inertia index by one unit lowers the propensity to save by 98.8%. Women from households with 3 and more members have a lower chance for saving compared with single women by 87% and 88.6%, respectively. Attention should be given to a large diversity of factors influencing the decisions to save in this age group, and a relatively large impact of support and media indexes on decision making. The Cox-Snell R^2 coefficient amounts

to 0.470, and Nagelkerke R^2 coefficient is at the level of 0.627. The value of the Hosmer-Lemeshow test is 42.553 ($p = 0.114$). This indicates that the hypothesis on the equality of the observed and predicted values is not rejected, and it points to a good fit of the model.

Table 6 presents the values of odds ratios for women aged 46–60 years.

Table 6. The values of odds ratios for women aged 46–60 years

Variable	Reference level	Odds ratio
Place of residence	city	0.302*
IZW	—	2.564*
ISP	—	0.313*
IRM	—	1.580
IOI	—	0.006*
Income	up to 1,500 PLN	0.076*
Income	1,500-2,000 PLN	0.143
Income	2,000-4,000 PLN	0.371

* statistically significant estimations for significance level $\alpha = 0.05$.

Source: author's research.

For this age group, key variables identified on the basis of the Akaike criterion include the place of residence, income and IZW, IRM and IOI indexes. The results of modelling point to the statistical significance of the above mentioned factors on decisions to save in the oldest analysed group of women. Residence in cities lowers the chance for additional saving by 69.8% compared with the inhabitants of rural areas. An increase in the support index by one unit results in a more than 2.5-fold increase in the chance for additional saving. An increase in job stability lowers the chance for saving by 68.7%, and an increase in the inertia index by one unit lowers the propensity to save by 99.94%. Women with an income up to 1,500 PLN, compared with those with an income above 4,000 PLN, have a chance to save which is by 92.4% lower. Attention should be given to the opposite impact of job stability in this group of women – the higher job stability is, the lower the chance for engaging in additional activities to increase retirement savings. Also, there are a variety of factors influencing decisions to look for additional sources of retirement savings in this group of women. The Cox-Snell R^2 coefficient amounts to 0.486, and Nagelkerke R^2 is equal to 0.648. The value of the Hosmer-Lemeshow test is 53.241 ($p = 0.096$). This indicates that the hypothesis on the equality of the observed and predicted values is not rejected, and it points to a good fit of the model.

5. Discussion

The research of women's attitudes to retirement, as already mentioned, is a relatively new field of study. Three decades ago, Anson *et al.* (1989) stated that there was a knowledge gap in the area of correlations between gender, family status and women's attitudes to retirement. The assumption that women are focused on family life has led to a common belief that women's retirement is not an issue. As a result, earlier research studies concentrated on men's attitudes, while women's opinions were largely ignored (Szinovacz, 1982). Even today, the knowledge about the impact of family life on attitudes to retirement is limited, hence we hope that our study can, to some extent, fill a knowledge gap in this field.

It is true that more women than men in Poland resort to additional forms of saving for retirement (Matejuk, 2017). However, women start paying attention to the problem of saving too late. Starting saving after reaching the age of 40 does not enable them to save enough funds to considerably increase living standards in the period of retirement. In order to raise sufficient funds, women should start saving early – before reaching the age of 30, so it is of crucial importance to make women think about retirement early. For this reason, one of the major variables analysed in our study is age – female respondents are divided into 3 age groups: 18–30 years, 31–45 years, and 46–60 years (in 2021, the retirement age for women is 60 years). The grouping variable is age, while independent variables include income, household size, place of residence, and the previously mentioned indexes: job stability (JSI), media diversity (MDI), personal inertia (PII), and external support (ESI). Obviously, women's propensity to save is a dependent variable.

We found out that the youngest women's (18–30 years) propensity to save depends mostly on their place of residence (cities) and two indexes: JSI and PII. Residence in cities lowers the chance to save by as much as 84.4%, which is a new conclusion not found in the literature. In turn, it is understandable that women at the beginning of their careers regard job stability (JSI) as an important issue – an increase in this index by one unit increases the chance to save by as much as 700% (Table 4), so one can see a very large dependence here. This is confirmed by other studies which claim that job stability and income are crucial to every day decisions (Lewandowska-Gwarda, 2018; Unton, 2021). Of course, the assumption that one should save for a long time in order to have the appropriate effect, changing the weight of the index, which should be kept in mind. An equally significant role is played by PII – an increase in the inertia index decreases the chance to save by 99%. It should be noted that the PII index is significant in each age group. This indicates that women, regardless of their age, think about retirement and

understand the significance of saving (Ekerdt, 2009), but they need the inner conviction that it is necessary now. This is in the line with an increasing life expectancy, discussed for example by Tabellini (2002), Hospido and Zamarro (2014).

A larger number of variables which affect saving for retirement are identified in the age group 31–45 years (Table 5). Significant factors include the place of residence, the number of household members as well as such indexes as external support (ESI), media diversity (MDI) and personal saving inertia (PII). Similar conclusions are presented by such authors as Spratlin and Holden (2000) and Unton (2021). In this period women are active on the labour market, they have opportunities for promotion and gaining new qualifications and are often engaged in child care activities, so their day-to-day decisions are affected by a larger number of factors. Again, residence in cities lowers the chance for additional saving (in this group by 79.1%). The chance for saving is also lowered by household size – as already mentioned, women in households with 3 or more persons are limited in their saving activities as compared with 1- and 2-person households (by more than 87%). The ESI index, which includes the conviction that saving is possible when information about investment opportunities is widely available and women can rely on family support, also has a major impact on the propensity to save – an increase in the index by one unit increases the chance to save by 200%. A significant role is also played by media diversity (MDI) – an increase in this index by one unit increases the chance to save by 93.8%. Personal saving inertia (PII) has a greater effect – an increase in the index by one unit leads to a 98.8% decrease in the chance to save.

In the age group 46–60 years a key role is played by such variables as the place of residence, income and the support index (ESI), job stability (JSI), and personal saving inertia (PII). Surprisingly, job stability has the opposite effect – greater job stability is accompanied by a lower propensity to save for retirement (Table 6). It can result from the fact that at this age women reach a certain professional status, and they offer financial support to children or grandchildren. Moreover, they incur expenses related to health care and lifestyle (Gillen and Heath, 2013). In this age group a significant role is played by ESI (availability of information and family support). An increase in the index by one unit increases the chance to save by 250%. Similarly, an increase in the personal inertia index (PII) lowers the propensity to save by 99.4%. Another important factor is income – the chance to save for women with the lowest income falls by 92.4% compared with those with an income exceeding 4,000 PLN (877 euros). Again, we have shown that residence in cities lowers the propensity to save (in this group by 69.8%). It should be noted that residence in cities in each group decreases the chance to save. It can be attributed to two factors: 1) women living in cities can be aware of better opportunities for

increasing their income potential, so they are less concerned about the future; 2) cities offer more spending opportunities, thus decreasing possible savings.

The conducted calculations allow for building a model which describes correlations between the grouping variable (age) and the independent variables (indexes and variables related to respondents) – the results of modelling are presented below in Figure 1 (statistically significant variables).

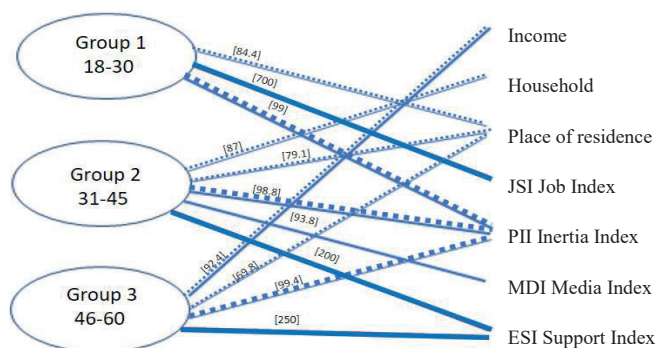


Figure 1. Correlations between age groups and predictors

Source: author's research, data in the model, see: Tables 4, 5 and 6.

The dotted lines indicate that a given variable has a negative impact on the propensity to save (income up to 2,000 PLN or residence in cities); the solid line shows a positive impact, e.g. an increase in ESI (the support index) by one unit increases the propensity to save (values in brackets). The most significant positive and negative effects are highlighted in each age group – group 1 – JSI and PII, and group 2 and group 3 – ESI and PII indexes.

The job stability index (JSI) turns out to be the most significant factor in the group of the youngest respondents. Women are concerned about career breaks caused by maternity leaves or the loss of jobs resulting from child sickness (Boeri, Brugiavini, 2008). Regardless of reasons, even if absence from work is covered by social insurance, women's compensation and promotion opportunities are negatively affected. As a result, lower compensation has a negative impact on future retirement benefits. The ESI index turns out to be significant in group 2 and group 3. It comprises such elements as the need for information about pension levels, investment opportunities, as well as support from partners or children. Women are more inclined to save if such needs are fulfilled.

As already mentioned, the paper's research objective was to **identify and measure the factors that encourage women to save**. The conducted calculations (Figure 2) lead to the

conclusion that regardless of age, the following factors are statistically **significant for the whole analysed group**: women's income, place of residence, and PII, ESI and MDI indexes. Income below 1,500 PLN (330 euros) lowers the propensity to save by 86.7%. Similarly, income up to 2,000 PLN (438 euros) lowers the propensity to save by 84.1%. It can be concluded that income is a major determinant of women's propensity to save for retirement.

Also, residence in cities lowers the propensity to save for the whole analysed sample by 47.1%. However, the main determinants for additional saving are the generated indexes – an increase in PII by one unit lowers the propensity to save by as much as 97.9%. In turn, an increase in ESI by one unit increases the chance to save by 92.4%, while an increase in MDI by one unit increases the chance to save by 62.5%. It can be stated that saving for retirement is determined by income, place of residence, women's personal convictions about retirement, the availability of information about investment opportunities as well as the availability of information about retirement in the media. These correlations are presented in Figure 2, which shows that the propensity to save is lowered by income and residence in cities, and is also dependent on three indexes – an increase in PII by one unit lowers the propensity to save, while an increase in ESI and MDI by one unit increases this propensity. This means that women condition their savings on the available information on pensions as well as on the support of their spouse and children, which is partly in line with the conclusions of Gillen and Heath (2013), Jedynak (2016), and Skwirowski (2020).

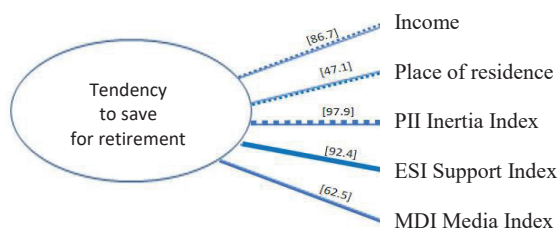


Figure 2. Correlations between the propensity to save and predictors

Source: author's research; data in the model, see Table 3.

Among the analysed independent variables, the most significant ones include the personal inertia index (PII) and the support index (ESI). These indicate that women who want to save for retirement need, in the first place, to have an inner conviction that it makes sense and they should do it. They are discouraged from saving by the lack of such a conviction and, simultaneously, by household expenses. It is also related to the ESI index – women need easier access to information

about saving and future pension levels (Boeri, Brugiavini, 2008; Jedynak, 2016; Skwirowski, 2020). Independently of marital status and personal wealth, women live longer and to ensure decent living standards they should make conscious decisions related to their retirement plans. Gillen and Heath (2014) stress that retirement self-education is a life-long necessity, enabling women to plan and make rational decisions – this is also visible in our results.

Conclusions

The considerations presented in our work are of key significance to current disputes concerning social security issues, as well as to women's life decisions. Reports say that women start paying attention to the problem of saving too late – starting saving after reaching the age of 40 does not allow them to put away enough funds to considerably increase living conditions in the period of retirement. For this motive, one of the major variables analysed in our work was age – female respondents were separated into 3 age groups: 18–30 (Group 1), 31–45 (Group 2), and 46–60 years (Group 3). The grouping variable was age, while independent variables included income, household size, place of residence, and the previously mentioned indexes: job stability (JSI), media diversity (MDI), personal inertia (PII), and external support (ESI). Obviously, women's propensity to save was a dependent variable.

We found out that the youngest women's (Group 1) propensity to save depends on their place of residence (dwelling in cities lowers the chance to save) and two indexes: JSI and PII. The job stability index (JSI) turns out to be the most significant factor in Group 1. This is due to the fact that women are concerned about newly started work, and then career breaks caused by maternity leaves or the loss of jobs resulting from child sickness. A larger number of variables which affect saving for retirement are identified in Group 2. Significant factors include the place of residence, the number of household members as well as such indexes as external support (ESI), media diversity (MDI) and personal saving inertia (PII). In Group 3 a key role is played by such variables as the place of residence, income and the indexes: external support (ESI), job stability (JSI), and personal saving inertia (PII). This may be due to the specificity of this stage of life: women often offer financial support to children or grandchildren, and incur expenses related to health care and their lifestyle.

The ESI index turns out to be significant in Group 2 and Group 3. It comprises such elements as the need for information about pension levels, investment opportunities, as well as support from children. It should be noted that residence in cities in each group decreases the chance to save. It can be attributed to two factors: 1) women living in cities can be aware

of better opportunities for increasing their income potential, so they are less concerned about the future; 2) cities offer more spending opportunities, thus decreasing the possibility to save. The conducted calculations lead to the conclusion that regardless of age, some factors are statistically significant for the whole analysed group: women's income, place of residence, and PII, ESI and MDI indexes. It can be concluded that generally income is a major determinant of women's propensity to save for retirement, while other factors vary depending on the stage of a woman's life.

The concept of gender antagonism creates stereotypes related to social roles (i.e. women should not work) and leads to the marginalization of women in many societies. Still, however, statistically women live 7–8 years longer than men, so it can be stated that old age is dominated by women, although their resources are lower. Therefore, social pension schemes – i.e. type of scheme under which the benefits are being provided - and women's individual saving decisions should give consideration to the truth that it is necessary to accumulate additional funds which should be adequate for several decades after retirement. It is worth adding here that the schemes providing social benefits vary considerably between countries, thus obtaining a pension requires different conditions and depends on different factors (OECD 2013).

The paper does not exhaust the topic and opens several fields for further research such as: How does the information policy of pension institutions influence women's decisions? Why are cities not a good environment to save? How can one increase women's inner belief that they need to save for retirement? There seems to be a lack of scientific studies on these subjects.

There are also limitations to this study: 1) as already mentioned, the survey sample does not fully reflect the age structure of women in Poland, thus, despite the large research sample, the results should be generalized with appropriate caution; 2) the study concerned only women from Poland, so the results are both geographically and socio-politically limited; 3) the authors created their own original indexes grouping the indicators, which to some extent makes comparing the results difficult; 4) the study concerned saving for retirement, and not saving at all, which narrows the scope of the research.

In summary, however, it can be said that saving for retirement is a topical issue and the undertaken analysis may have both theoretical and practical value. Unfortunately, there are many factors limiting the propensity of women to save which potentially may have an adverse effect on the quality of life in retirement. This situation could be improved by the increased engagement of public institutions responsible for the functioning of pension systems, but also by a greater interest in retirement issues shown by women themselves.

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