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INDIVIDUAL PENSION SECURITY ACCOUNTS – DEMOGRAPHIC AND ORGANISATIONAL STRUCTURE

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Purpose: The purpose of this study was to present the situation of one of the basic components of the third pillar of the Polish pension insurance system, i.e. the Individual Pension Security Accounts (IPSA; Polish: IKZE). The main focus was the changing demographic structure of the IPSA participants. This is of great importance in view of the ageing of the Polish population and social security for the old age.
Design/methodology/approach: The objective was achieved by analysing statistical data obtained from the web pages of the Polish Financial Supervision Authority (FSA; Polish: KNF). The method used was *desk research*, i.e. the study and analysis of official statistics documents, reports, publications, statistical yearbooks, etc. This method is also called secondary research or complementary research, as it is based on the analysis of already existing available data from various sources, such as the press, the Internet, analytical reports, and statistical compilations. However, it also involves the verification and consolidation of the available data. Finally, the methods of literature analysis and statistical analysis were applied (starting with the presentation of basic statistics and ending with selected methods of multivariate analysis).
Findings: The demographic structure of IPSA holders is changing. There is a relative increase in the number of older people and a decrease in the number of younger people aged up to 30 and between 31 and 40. As saving up should start at the age of 20-25, the above phenomenon should be considered as worrying. IPSAs do not fulfil their role. There are various reasons for this: an ageing population, lack of awareness of the need to save for the old age, and incentives for saving up with IPSAs losing their function due to changes in tax law.
Research limitations/implications: A limitation of the research conducted was the structure of the available data. Cross-sections of the age of the insured were only available in terms of the number of active IPSAs. There is no publicly available data of this type, but in terms of the value of the accumulated capital, the number of accounts into which payments were made, the average amount of payments or the number of one-off or instalment withdrawals. The inclusion of the aforementioned data could broaden the basis for conclusions on the state of the pension insurance market.
Originality/value: Admittedly, the study of the demographic structure of the Polish population in the context of the demand for pension products appears in literature from time to time, but such studies are few. What is new here is the presentation and analysis of the current data (as of the end of 2023) and, above all, the application of multivariate data analysis to the subject of the study. The article is addressed to researchers dealing with the social insurance system, in particular pension insurance.

Keywords: social insurance, pension insurance, demographic structure, multidimensional scaling.
Category of the paper: research paper, conceptual paper.

1. Introduction

In 1999, a fundamental reform of the pension system was introduced in Poland. The previous pay-as-you-go model was replaced with a mixed pay-as-you-go and funded model. Since then, we have begun to speak of pillars of the pension system in Poland. The first of these is the reformed Social Insurance Institution (SII; Polish: ZUS) and the second one is the Open Pension Funds (OPF; Polish: OFE). In addition to these two pillars, there is also a third pillar, to which different authors include various types of voluntary pension security schemes. The ones most frequently referred to include: Employee Pension Schemes (EPP; Polish: PPE), Individual Pension Accounts (IPA; Polish: IKE), Individual Pension Security Accounts (IPSA; Polish: IKZE), and Employee Capital Plans (ECP; Polish: PPK).

The first pillar is a mandatory public system, managed by the SII. It is, as before, a pay-as-you-go type of scheme, with the difference that the defined benefit system has been replaced with a defined contribution system. This means that, although part of the contribution going into the first pillar is still allocated to the payment of current pensions, the SII "records" how much each person has accumulated over the years of work in their "virtual" account. This way, the working life period and earnings have been linked to the amount of the pension. The amount of the pension benefit that will be paid from the first pillar corresponds to the amount of pension capital paid in divided by the life expectancy of the person in retirement. This encourages longer working lives.

The reform modification implemented in 2014 significantly reduced the role of OPFs. (Jamróz, Lisowski, 2017). Various proposals for further changes to the pension system have been put forward since 2017. One of these is a project for the complete abolition of OPFs. Among other things, it is proposed that 75% of the remaining funds in OPFs should go to IPSAs. Although they are less popular than OPFs, they are similar to them in terms of the tax preferences applied (in both cases, it is a deduction from income).

IPSAs have been functioning in the Polish social insurance system since 2012. Since their introduction, they have been an extension of the third pillar of the system, i.e. voluntary saving for the future retirement. There are currently four incentives for setting up an IPSA:

- The possibility to deduct the amounts contributed to IPSA from income (upon annual tax return filing).
- Exemption of the profits generated by these savings from income tax on capital gains (the so-called Belka tax).

- Exemption from inheritance and gift tax.
- Welcome payment and annual subsidies from the state budget.

Regarding the first point, it should be added that contributions to IPSA, and therefore deductions, cannot exceed a set limit.

An IPSA is therefore one form of saving for the old age. At the same time, changes have been made to the tax system in Poland, in particular to the Personal Income Tax Act. The lowering of the first tax threshold and a significant increase in the amount of tax-exempt income undoubtedly had an adverse effect on the IPSA market. One of the primary advantages of an IPSA, which is the deduction of contributions from income, has lost much of its attractiveness. On the other hand, awareness of the need to save for the old age is not growing in Poland. The increasing life expectancy and the ageing of the population can also be observed. In this situation, it seems interesting to take a look at the demographic changes taking place in the IPSA market in Poland.

2. Methods

As mentioned earlier, the *desk research* method was used, among others. The primary data source was the FSA website (https://www.knf.gov.pl/dane_i_opracowania). A total of 23 semi-annual reports on the state of the IPSA market (December 2012 – December 2023) were collected. The data included the number of policies by age group, separately for women and separately for men (KNF, 2024). The age ranges were as follows:

- up to 30,
- 31-40,
- 41-50,
- 51-60,
- 61-65,
- over 65.

IPSAs can be operated by 5 types of entities:

- insurance companies,
- Investment Fund Companies (IFCs; Polish: TFI),
- entities conducting brokerage activity,
- banks,
- Public Pension Fund Companies (PPFCs; Polish: PTE; as voluntary pension funds – VPFs; Polish: DFE).

The demographic structure of IPSA holders was presented first. This structure was then transformed into a set of 60 variables for further analysis. The calculated simple Pearson linear correlations show a number of significant relationships between the variables, with both directly proportional and inversely proportional relationships. However, the correlation matrix (60x60) does not provide basis for generalised conclusions. Significant linear correlation coefficients only indicate that some kind of a relationship exists between the variables, but the direction of the causal relationship cannot be determined based on them. It cannot even be ruled out that the relationship is random. In order to verify this, it would be necessary, for instance, to examine causality according to Granger (Granger, 1969) for each pair of variables. Instead of the aforementioned method, multidimensional scaling was used.

Multidimensional Scaling (MDS*)* can be an alternative to factor analysis. In general, the goal of the analysis is to detect meaningful underlying dimensions that allow the researcher to explain observed similarities or dissimilarities (distances) between the investigated objects. In factor analysis, the similarities between objects (e.g. variables) are expressed in the correlation matrix. With MDS, analysis of any kind of similarity or dissimilarity matrix, in addition to correlation matrices is possible.

3. Results

As it appears from Table 1 (Appendix), the age structure of IPSA participants is changing. As far as women are concerned, the share is decreasing in the case of those aged up to 30 (from 8.4 to 1.6%), from 31 to 40 (from 13.6 to 8.2%), and from 41 to 50 (from 15 to 12.1%). After period of growth between 2012 and 2016, the proportion of people aged 51 to 60 has also been decreasing from 2017 onwards (from 15.8 to 13.1%). However, the proportion of people of retirement age is increasing (from a total of 0.4 to as much as 12.7%).

As far as men are concerned, the changes in the age structure look different. While the share of those aged up to 30 has fallen sharply (from 11.6 to 3.0%), the share of those aged between 31 and 40 has changed only slightly (initially falling from 13.7 to 11.7% and then rising to 12.7%). For the 41-50 age range, a slow increase can be observed (from 12 to 14.3%). For the 51-60 range, virtually no fluctuation is observed (11.9% on average). Finally, for the 61 to 65 bracket, there is an increase (from 0.6 to 6.2%), and then, from 2019 onwards, a decrease (from 6.2 to 5.4%). As with women, we can see an increase (from 0.1 to 5.2%) for those over 65.

Figures 1 and 2 (Appendix) show the development of the number of IPSAs by age group. When comparing the number of accounts at the beginning of the study period (December 2012) with the number of accounts at the end of the period (December 2023), it can be seen that it has not changed significantly. This is the case for most age groups. The total number of IPSAs

among women also changed only slightly, falling from 252,000 to 246,000 over the aforementioned period. Among men, in turn, the number of IPSAs increased slightly from 245,000 to 269,000. It should be noted at this point that the significant decrease in the number of IPSAs in all age groups, visible in Figures 1 and 2, which occurred between 2019 and 2020, was due to the closure of accounts that were not funded by contributions (KNF, 2024).

Other information is provided by the cross-sections taking into account the institution (and therefore the form) in which IPSAs are operated. As already mentioned, IPSAs can take 5 forms. As it appears from Figures 3 and 4 (Appendix), the popularity of the different forms of IPSAs has varied for both men and women. Between 2012 and 2019, the largest number of accounts were operated by insurance companies. At the same time, accounts operated by IFCs became more significant. As already mentioned, in the years 2019-2020, accounts to which no contribution was made were closed. Charts 3 and 4 indicate that insurance companies have been affected the most by this closing of accounts. At the end of June 2019, the total number of IPSAs operated by insurance companies was 445,500, and only 96,400 a year and a half later. Since then, the largest number of IPSAs have been operated by IFCs and, as can be seen, their advantage over other forms has been growing. Moreover, the number of accounts operated in a different form than by IFCs has remained stable since 2020 (with the exception of men with IPSAs operated by brokerage entities).

The data collected makes it possible for various summaries and cross-sections to be created. However, in order to capture different relationships than previously found, a multidimensional scaling method was used. Figure 5 shows a two-dimensional scatter plot in a reconstructed space. Several groups of variables are clearly visible. The 3 most relevant groups are marked. There are 10 variables that belong to group 1, eight of them summatively represent accounts operated for people up to 60 years of age in the form of VPFs, and the other two correspond to accounts for people under 30 years of age operated by insurance companies. Group 2 includes eight variables relating exclusively to accounts operated by insurance companies for people aged between 30 and 60. Finally, the most numerous group 3 comprises 34 different variables, including, which is worth noting, a set of six variables representing accounts operated by brokerage entities. The remaining 10 variables were not included in any of the selected groups. The formation of three groups indicates a significantly different development of demand for IPSAs depending on the age and gender of the insured and depending on the form of the account (organisational form). In order to interpret the results obtained, an attempt should be made to identify the two dimensions of multidimensional scaling. Additional calculations indicate that dimension one reflects the sum of Pearson linear correlation coefficients *(r)* between the given variable and the other 59 variables. Negative values on the X-axis therefore indicate a preponderance of negative correlations, i.e. inversely proportional relationships between the variables. Conversely, positive values on the X-axis show a preponderance of directly proportional relationships between the variables, i.e. collinearity between the variables. It was somewhat more difficult to interpret the significance of dimension two. Ultimately,

it can be surmised that the positive values of the vertical coordinate indicate the preponderance of relative increases in the number of accounts for the given demographic group. Figure 5 shows that variables K61_65_ZU and M61_65_ZU have the highest vertical coordinate value. The data indicates that the numbers of IPSAs operated by insurance companies for people between 61 and 65 years of age show an increase for most six-month periods. However, variable M41_50_DFE has the lowest vertical coordinate. The number of IPSAs operated in the form of VPFs for men between 41 and 50 years of age showed a decrease for almost half of the half-year periods under study.

4. Discussion

One of the fundamental social problems is pension security, or old age security. The reform of the pension system mentioned above, which was introduced in 1999, was supposed to create completely new prospects for the insured by introducing a mixed pay-as-you-go and funded system. In particular for those born after 31 December 1968, who were obliged to opt for the OPF membership. After 1999, the system has been reformed several times, with voluntary forms of saving for the old age introduced in parallel. Among others, IPSAs were created, which are the subject of this study.

There has been a long-standing debate in literature on whether to save for the old age and for how long (from when). This, of course, depends on a number of factors, such as the existing pension system and the demographic situation, including: life expectancy, birth rate, replacement rate or the number of people working per pensioner. Other factors include: the level of household income, the state of the healthcare system, the level of inflation, the level of unemployment, and probably many others. Also of fundamental importance is the awareness of the need to save for the old age.

As far as Poland is concerned, the problem of the ageing population should be noted. Between 2012 and 2019, the average life expectancy of women increased from 80.98 to 81.75 years, and that of men also increased from 72.71 to 74.07 years. There were decreases in 2020 and 2021 (COVID-19 pandemic), but in 2022, the situation returned to normal and increases were recorded to 81.06 years for women and 73.42 years for men. According to an announcement of the Social Insurance Institution from March this year, in 2023, a person (there is no gender breakdown in the announcement) aged 60 had 22.02 years of life ahead of them, and a person aged 65 – 18.24 years. In other words, this is therefore the averaged projected period of retirement. As this time has increased, the pensions granted from April 2024 have been lower. According to the SII, the latest life expectancy table results in the pension of a person aged 60 being calculated as 3.7% lower and that of a person aged 65 as 4.1% lower than on the basis of the previous table (GUS, 2024). This corresponds to amounts lower by PLN 100-150.

The replacement rate, i.e. the ratio of the average pension received to the average salary received during working life, has also been changing unfavourably. At the beginning of the period under study, i.e. in 2012, the replacement rate was 60%. Within the next two years, it rose to 61.8% and has been declining since 2014. In 2020, the replacement rate was 42%. In 2022, the rate did increase to 54%, but this was the result of additional benefits and not a steady trend. According to forecasts, by 2060 the replacement rate could even fall to around 19%, assuming the current retirement age (ZUS, 2024).

The number of working people per pensioner is also decreasing. In 2010, it was 1.94; by 2023, it has fallen to 1.9.

The remarks made in the last two paragraphs, mainly apply to the pay-as-you-go system. In a funded system, contributions go into an individual account, so the replacement ratio, or the number of people working per pensioner, are of little importance.

In view of this state of affairs, the need for an additional voluntary pension security scheme seems natural. Unfortunately, this is not obvious in practice. Various studies have been carried out on this issue over the recent years. One of the latest is a study conducted in March 2024 by *Goldman Sachs TFI* (Goldman Sachs, 2024). According to this study:

- only slightly more than half of Poles (54%) are thinking about somehow securing their financial future with an additional pension,
- 21% of respondents think they will work for the rest of their lives,
- 25% rely only on benefits paid out by the state insurer,
- among those taking steps towards additional retirement security, saving is most preferred (49%), followed by investing (32%) and owning additional retirement products (31%),
- the most frequently mentioned methods of collecting funds for an additional retirement pension include a savings account (28%), a deposit (21%), and putting money "under the mattress" (18%),
- more than 60% of respondents are willing to put aside no more than PLN 500 per month for an additional pension,
- more than half of the respondents will be satisfied with an amount between PLN 1000 and PLN 3000 of additional pension. However, one in five aims at an additional monthly amount of PLN 4000,
- only one in three Poles is able to correctly decipher the Polish abbreviation for IPSA (IKZE),
- only 6% of Poles declare that they use an IPSA,
- 16% of self-employed persons declare that they have an IPSA,
- as many as 36% of IPSA holders choose not to use their allowance (deduction from income),

- only 3% of Poles use the IPSA tax relief, and among IPSA holders only 64% of respondents use it,
- only one in 10 Poles knows what the annual limits for IPSA contributions are,
- pension products are mainly held by men (37%) aged 40-49 (39%), people with higher education (38%), those running a business (44%), and those earning more than PLN 6,000 per month.

In the context of the above research, it is worth asking the question: When should one start saving? The Milken Institute, for instance, states that we should start saving for retirement at the age of 25. Moreover, it is necessary to put aside PLN 100 per week to accumulate more than PLN 1.1 million by the age of 65 (Milken Institute, 2024). Literature on saving points to time horizon as one of the most important determinants of saving behaviour (Lea, Webley, Walker, 1995; Rabinovich, Webley, 2007). Research also indicates that a further horizon is positively correlated with saving in general (Avery, Kennickell, 1991; Fisher, Montalto, 2010). A further planning horizon is also positively correlated with the goal of saving, which may be a higher pension (Białowąs, 2013).

Taking the above into account, it might be assumed that one should start saving for the future retirement at the age of 25-40 or even immediately after starting the first job.

Meanwhile, Polish statistics indicate this is not the case here. The demographic structure of IPSA holders does not seem to promise adequate pension security for many people.

5. Summary

According to the research carried out on IPSAs, the demographic structure of the holders is deteriorating from the point of view of public interest, which is the need to secure adequate social and living conditions for all socio-economic groups, particularly people of retirement age. The percentage of people aged up to 30 and between 31 and 40 (i.e. the age at which one should already be saving for the old age), both among women and men, has been steadily declining, and has been doing so since the introduction of IPSAs. These figures have fallen from 22 to 9.8% and from 25.3 to 15.7% respectively. Also, the multidimensional scaling procedure carried out indicates, in part, that the variables representing account holders aged up to 30 and those aged 31 to 40 have clustered in separate groups (groups 1 and 2) than the others. It should be mentioned here that this applies to accounts operated by insurance companies and accounts in the form of voluntary pension funds. These variables have the lowest negative horizontal coordinates, which indicates that they are different from most of the other variables clustered in group 3.

Thus, it can be concluded that IPSAs do not fulfil the tasks set for them. The reasons appear to be of various types.

Firstly, Polish society lacks sufficient awareness of the need to save for the old age and of the applicable tax law (deductions from income). Moreover, the new pension system has only been in place for 25 years and the IPSAs for just 12 years, so relatively few people receive an additional pension. Withdrawals made from IPSAs in 2023 (both in instalments and one-offs) amounted to less than PLN 162 million. Although as recently as 2020, it was around PLN 29 million. In comparison, the amounts paid out from the Social Insurance Fund (SIF; Polish: FUS) in 2023 are close to PLN 270 billion.

Secondly, Poles' incomes are simply too low, which does not allow them to save for the old age (this problem is only hinted at; it may be the subject of further research).

Thirdly, as far as IPSAs are concerned, this form of saving is no longer attractive. The introduction of a high tax-exempt amount of income (PLN 30,000), the reduction of the first tax rate (general, continuous progressive tax scale) to 12%, and raising the tax threshold to PLN 120,000 makes the perspective of deducting amounts paid into an IPSA from income, combined with the requirement to pay 10% tax in the future, hardly interesting. A reduction or abolition of the aforementioned tax has been called for, but so far it has remained in place. The benefit of exempting the IPSA funds from the "Belka tax" is not much of an incentive either. For instance, one of the largest Polish banks (ING Bank) offers the IPSA in the form of a deposit account bearing interest at 4% per annum. With inflation at 2.5% (as of June 2024), the real interest rate on the IPSA is only just 1.5%. Without much difficulty, one can find an offer of bank deposits with an interest rate of 5.5-6%. In addition, of course, the money paid into the IPSA is "frozen" until the age of 65. The current situation of IPSAs has improved anyway, because only a few months ago, interest rates on the accounts were lower and inflation was higher. This resulted in real interest rates being negative.

The last incentive to set up an IPSA is the exemption from inheritance and gift tax. But the act on inheritance and gift tax has been significantly liberalised in recent years. For instance, an unlimited tax exemption has been introduced for persons in the so-called "zero" tax group, i.e. members of the immediate family (spouse, descendants, ascendants, stepchildren, siblings, stepfather, stepmother). The only condition is the submission of a relevant tax form (IN-1).

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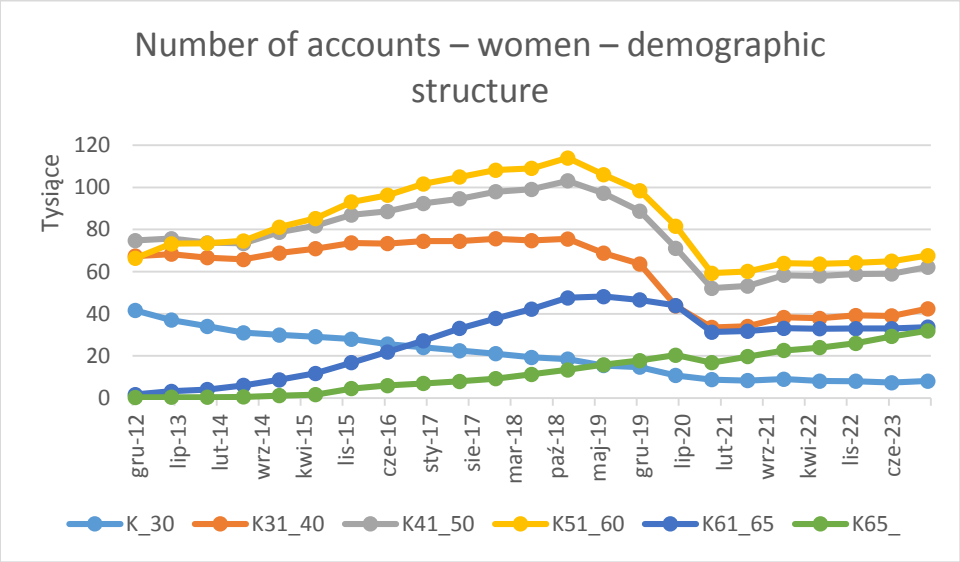
Appendix

Table 1.
Demographic structure of people with an IPSA (%)

Structure	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Women aged:	**50.7**	**50.8**	**50.9**	**50.7**	**50.8**	**50.7**	**50.9**	**50.4**	**49.5**	**49.3**	**48.2**	**47.8**
up to 30	8.4	6.9	5.7	4.7	3.7	3.1	2.5	2.2	2.2	2.0	1.7	1.6
31-40	13.6	13.4	13.0	12.3	11.6	11.0	10.3	9.7	8.2	8.1	8.2	8.2
41-50	15.0	14.8	14.9	14.5	14.4	14.2	14.1	13.6	12.8	12.7	12.4	12.1
51-60	13.4	14.8	15.4	15.6	15.8	15.7	15.6	15.0	14.5	14.3	13.5	13.1
61-65	0.3	0.8	1.7	2.8	4.2	5.5	6.5	7.1	7.7	7.6	6.9	6.5
over 65	0.1	0.1	0.2	0.8	1.1	1.3	1.8	2.7	4.1	4.7	5.5	6.2
Men aged:	**49.3**	**49.2**	**49.1**	**49.3**	**49.2**	49.3	49.1	49.6	50.5	50.7	51.8	52.2
up to 30	11.6	9.7	8.1	6.8	5.6	4.7	3.8	3.4	3.7	3.4	3.1	3.0
31-40 years old	13.7	14.3	14.2	14.0	13.5	13.2	12.7	12.8	11.7	11.7	12.5	12.7
41-50 years old	12.0	12.0	12.4	12.5	12.6	12.8	13.0	13.2	13.3	13.5	14.1	14.3
51-60	11.2	11.7	12.1	12.2	12.3	12.2	12.1	11.8	11.9	11.8	11.7	11.7
61-65	0.7	1.3	2.1	3.1	4.1	5.0	5.6	5.8	6.2	6.1	5.7	5.4
over 65	0.1	0.1	0.3	0.7	1.1	1.4	2.0	2.6	3.7	4.1	4.7	5.2

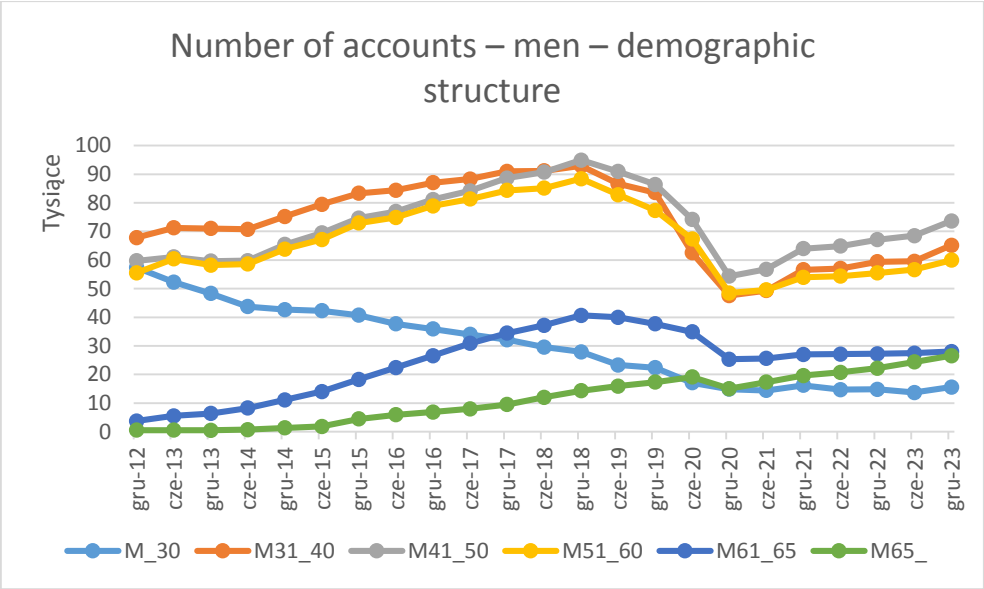
Source: author's own elaboration based on FSA data.



Note: K_30 – up to 30 years of age, K31_40 – 31-40 years of age, K41_50 – 41-50 years of age, K51_60 – 51-60 years of age, K61_65 – 61-50 years of age, K65_ – over 65 years of age.

Figure 1. Number of IPSAs in the years 2012-2023 – women.

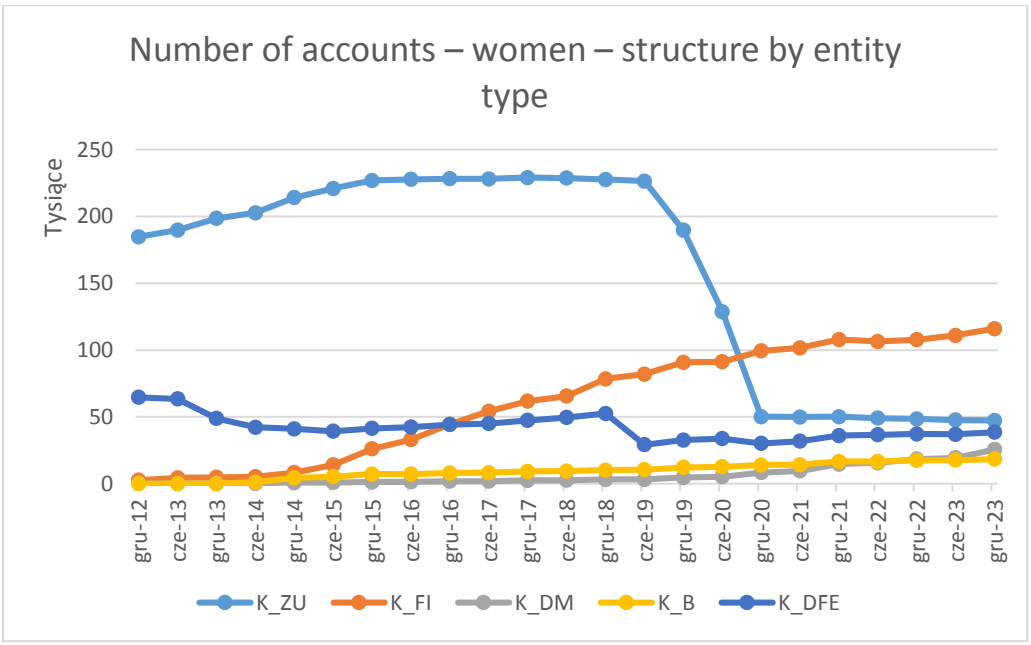
Source: author's own elaboration.



Note: M_30 – up to 30 years of age, M31_40 – 31-40 years of age, M41_50 – 41-50 years of age, M51_60 – 51-60 years of age, M61_65 – 61-50 years of age, M65_ – over 65 years of age.

Figure 2. Number of IPSAs in the years 2012-2023 – men.

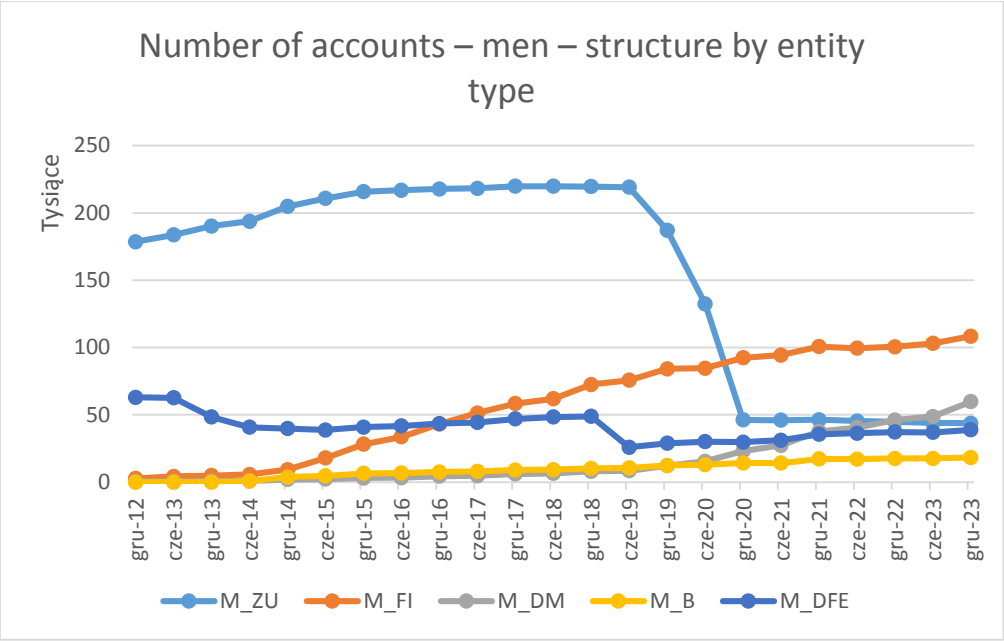
Source: author's own elaboration.



Note: K_ZU – insurance companies, K_FI – investment funds, K_DM – brokerage houses, K_B – banks, K_DFE – voluntary pension funds.

Figure 3. Number of IPSAs in the years 2012-2023 operated by different institutions – women.

Source: author's own elaboration.



Note: M_ZU – insurance companies, M_FI – investment funds, M_DM – brokerage houses, M_B – banks, M_DFE – voluntary pension funds.

Figure 4. Number of IPSAs in the years 2012-2023 operated by different institutions – men.

Source: author's own elaboration.

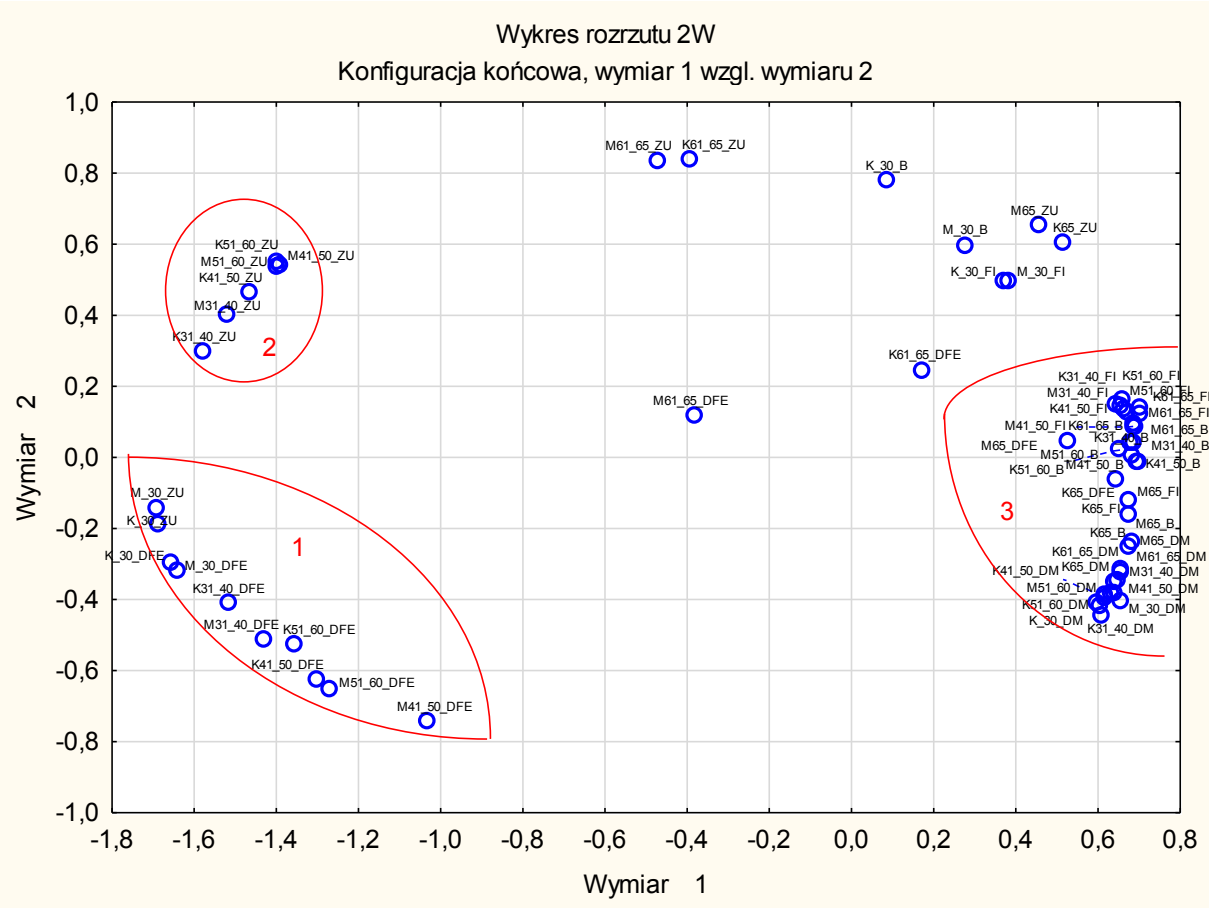


Figure 5. Multidimensional scaling.

Source: author's own elaboration with the use of *Statistica 14*.