
Influence of Pillar 3 of Pension System on Retirement Pensions Level in Poland: Will Voluntary Part of System Enable Decent Life in Old Age?

Submitted 14/12/20, 1st revision 17/01/21, 2nd revision 25/02/21, accepted 23/03/21

Bartosz Chorkowy¹, Agnieszka Bobrowska²

Abstract:

Purpose: The aim of this paper is the comparative analysis of the general saving ways included in pillar 3 of the pension system and showing their potential effectiveness from the perspective of the pension system participant. Will the resources allocated by the instruments of the voluntary pension system part significantly improve the level of the future pension? Will they allow a more decent life for an average Polish citizen in the period of the old age?

Approach/Methodology/Design: The unfavorable demographic situation in Poland causes that we should look with bigger and bigger fear at Polish pension system efficiency. Considering these demographic processes, at the same time we can unambiguously state that the level of a retirement pension will decrease for the significant part of the Polish in the perspective of the coming several dozens of years. Currently the replacement rate, that is the rate of the last pre-retirement earnings to the first retirement pension, equals about 50%. In coming years, it is predicted that the rate will drop to about 20-30%. Due to the decreasing level of benefits from the basic part of the pension system, saving in the supplementary system part, initiated by the employer or a future pensioner, is an effective way to ensure a higher living standard after retirement. Research methodology is the elaboration of a simulation and forecasts of the future level of benefits from PPK, PPE, IKE and IKZE applying the quantitative methods.

Findings: This paper presents the basic elements of the demographic situation in Poland as one of the major reasons of the pension system ineffectiveness, besides the analysis of pillar 3 products that is, the Employee Capital Plans (PPK), Employee Pension Schemes (PPE), Individual Retirement Account (IKE), Individual Retirement Protection Account (IKZE).

Practical Implications: The presentation of forecasted effectiveness of pillar 3 pension products for decision making. The improvement of Polish society awareness of pillar 3 and its influence on the future pension benefits level.

Originality/ value:

Keywords: Pension system, savings, pillar 3, aging of the society.

JEL Classification codes: J18, J26, G17.

Paper type: Research study.

¹Faculty of Economics, University of Opole, Opole, Poland, e-mail:bchorkowy@uni.opole.pl

²Faculty of Economics, University of Opole, Opole, Poland, e-mail:
abobrowska@uni.opole.pl

1. Introduction

Polish pension system should be perceived with growing concerns. This fact is caused by the unfavorable demographic situation in Poland which results from the decreasing birth rate and the increasing average life expectancy. The above-mentioned indicators significantly influence the level of paid pensions from the mandatory part of the pension system and in this way, they determine the system effectiveness. Considering the demographic processes, in the perspective of the coming few dozens of years it can be stated that the level of pensions for a major part of Polish society will significantly decrease. Currently the replacement rate, that is the rate of the last pre-retirement earnings to the first retirement pension equals about 50%. In the coming years it is predicted that the rate will drop to about 20%-30% (Chorkowy, 2018).

Due to the decreasing level of benefits from the base part of the pension system, saving in the auxiliary system part initiated by an employer or a future pensioner is the effective and simultaneously indispensable way of ensuring a higher life standard (Pieńkowska-Kamieniecka, 2015).

The aim of this paper is the comparative analysis of popular saving forms included in the pillar 3 of the pension system and presentation of their potential effectiveness from the pension system participant's point of view. Will the savings accrued via instruments of the voluntary part of the pension system significantly influence the level of the future retirement pension? Will it lead to a more decent life of an average Polish citizen at the old age?

2. Demographic Situation in Poland in the Years 1999-2019

In recent years in European countries the proceeding process of society aging can be observed. It is caused by the demographic trends, both the positive ones such as the growing average lifespan, as well as negative ones like dropping total fertility rates (Marcinkiewicz, 2018). Demographic factors influence pension systems with a delay, what is the result of the life cycle course. In the first phase (childhood and youth) a person is not connected with the pension system. In the second phase (adulthood – professional activeness) a person is the participant of the system paying pension premiums. In the third phase (old age – professional passivity) a person is a participant getting a pension benefit (Jabłońska-Porzuczek and Łuczka, 2016).

Demographic changes reflect proportions between the pensioners generation and employee generation that is the age dependency ratio. In Poland, the values of this ratio increase (Table 1). During the last decade, the ratio grew by 42% from the level of 26 to 37, so for 100 professionally active persons in 2019 there are 37 pensioners. As a consequence, the financing burden of pensioners consumption grew for the professionally active generation.

Table 1. Age dependency ratio in Poland in years 2010-2019

Year	2010	2012	2013	2014	2015	2016	2017	2018	2019
Age dependency ratio	26	28	29	30	31	33	34	35	37

Source: Own elaboration on the basis of data from the Main Statistic Office in years 2010-2019

It has to be noticed that according to Eurostat forecasts in 2100 Poland will be the country with the highest age dependency ratio among EU countries at the level of 63 (Eurostat, 2020). The age dependency ratio is connected with the so-called ageing ratio. Table 2 shows the values of the ratio in Poland in years 2010-2019. In 2019 the ageing ratio amounted 118 that is there were 100 children in the age 0-14 years for 118 persons in the age of 65 and older. In the analyzed period it signifies the increase by 33%. The difference of these population sizes in 2019 equaled 1.06 m to children disadvantage, whereas in 2010 it was 787 thousand but to the disadvantage of the old people.

Table 2. Ageing ratio in Poland in 2010-2019

Year	2010	2012	2013	2014	2015	2016	2017	2018	2019
Ageing ratio	89	97	98	102	106	109	112	115	118
Difference in populations size in thousand. *)	787	206	98	-110	-321	-530	-700	-867	-1060

Note: *) The difference in populations sizes between persons in the age 65 and more, and children in the age 0-14 years – the negative value signifies a bigger population of the older persons.

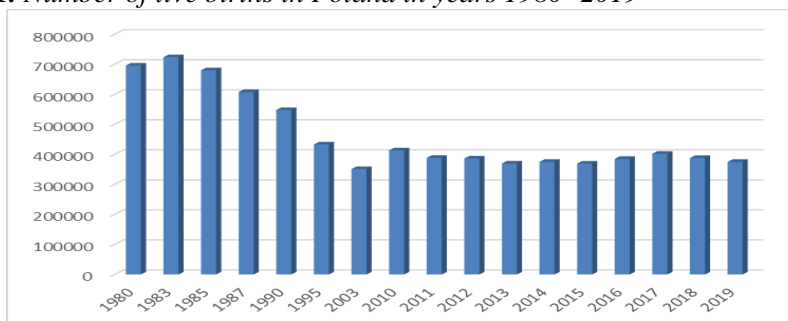
Source: Own elaboration on the basis of data from the Main Statistic Office in years 2010-2019.

Analyzing the demographic situation in Poland, the tendencies affecting the total birth rate and the average lifespan must be noticed. They significantly affect the level of paid pensions from the mandatory part of the pension system and in this way, they affect its effectiveness. For almost 30 years the birth rate depression state has been observed in Poland. The optimum value of total fertility rate which sustains the replacement of generations equals 2.10-2.15. It means that there are on average 210-215 children born per 100 women in the age of 15-49 years. In Poland since the nineties of the 20th century this rate has been definitely below 2 (in 2018 the total fertility rate in Poland equaled 1.43), what means that the birth number does not guarantee the simple replacement of generations.

From year to year, the birth rate has fallen, and since 1998 it has not reached 400 thousand (except for years 2008-2010 and 2017 when the level 400 thousand was slightly exceeded). In the last two years 2018 and 2019, 388 thousand and respectively 375 thousand of live births were registered so the decreasing tendency of birth number could be observed. The total birth rate and fertility rate also

decreased in comparison to 2017 as in 2018 the values reached: 10.1‰ and 1.435, and in 2019 9.8‰ and 1.4. Comparing to the level of birth rate in 1983 (the last year of “baby boom” in Poland) which equaled 19.7 ‰ and the birth number reached 723 thousand of babies. The number of live births in Poland in years 1980-2019 is shown in Figure 1.

Figure 1. *Number of live births in Poland in years 1980 -2019*



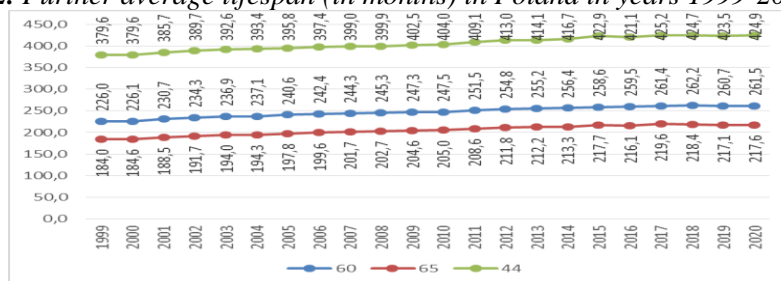
Source: *Own elaboration on the basis of data from the Main Statistic Office.*

The second very important aspect of demographic changes in Poland, which has the influence on the situation of future pensioners, is the average lifespan for persons at the age equal to the retiring age of the insured person. The average further lifespan is a statistic value, which defines the average period which passes from getting the right to retire to the death of the insured. It helps to set the probable period of the insured person at the retirement and to evenly divide the accrued means. The retirement pension granted in accordance with new rules equals the amount which is the result of the division of the basis of pension calculation by the average further lifespan of the future pensioner.

In the last twenty years average further lifespan in Poland shows a growing tendency. The fact of the diversified growth dynamics of particular age categories has to be noticed. The lowest pace of a further lifespan growth is observed among the persons in the age of 65 (the growth was analyzed in the period of 33.6 month). A slightly bigger increase is observed in the 60 years category. Whereas the highest growth of an average further lifespan is noted in case of persons in the age of 44 years³ (in the analyzed period of 45.3 months). Further average lifespan in Poland in years 1999 – 2019 is presented in Figure 2.

As a result of demographic transformations, the number, and the structure of population according to age have changed. At the end of 2019, the population of Poland equaled 38.38 m, including 6.9 m of persons in the age of 65 and more, what constitutes about 18.1% of total population. What is worth mentioning is the fact that in years 1990-2019 the number of older people grew by 3.1 m.

³ *The analysis assumes age 44 category for persons who joined the pension system on January 1 1999 that is on the date of introduction of pension system reform in Poland.*

Figure 2. Further average lifespan (in months) in Poland in years 1999-2020

Source: Own elaboration on the basis of data from the Main Statistic Office.

The share of people in the age of 65 or more in general population increased by 7.9 percentage point that is from 10.2% in 1990 r. to 18.1% in 2019. Unfortunately, the growth of the older people number was accompanied by the drop of number of children and teenagers in the last 25 years by about 10 percentage point. In 1990 the percentage of the above said group in Poland was at the level of about 25 %, whereas at the end of 2019 it equaled 15.3 %.

Summing up the above deliberation, it must be stated that Poland contends with a very serious problem of the unfavorable demographic situation. In 2018 our country was classified at the 8th position from the end in Europe. The worst situation is in case of Malta where there are 1.23 of live births per a woman. A slightly better situation can be observed in Cyprus, in Italy, in Spain and Greece. In all these countries the birth rate was in the range of 1.26-1.35. It shows the fact that the worst situation is in the south European countries. Economic problems touching these countries in the recent years can grow in the dozens of years when there will be workforce shortage able to provide for the ageing society ⁴.

3. Pillar 3 of Pension System in Poland

Pillar 3 of the pension system encompasses only solutions which allow to pay benefits after reaching the retirement age (Cristea and Thalassinou, 2016). The following features are characteristic for pillar 3 of the pension system (Gruszecki, 2001):

- a definite saving goal, that is for the old age,
- voluntarily created by the employer and participated by the employee,
- closed character of savings, which means savings can be activated after retirement age,
- supplementary character of benefits in comparison to pillar 1 and 2,
- connection between saving and employment,
- state help by promotion and tax discounts etc.,
- law institutionalization and a certain scope of supervision.

⁴Europe is aging and soon it will start to die out <https://obserwatorgospodarczy.pl>.

The participant joining the program which belongs to pillar 3 of the pension system is just the beginning of the way to reach satisfactory effects in the future. The person interested in participating in the voluntary part of the system can choose among a few options. Pillar 3 of the reformed pension system in Poland includes:

- Employee Pension Plans (EPP) which constitute a voluntary form of group saving for pension, organized by the employer with participation of employees;
- Employee Capital Plans (ECP) which constitute a common saving system for employees realized with cooperation of the employer and the state (PPK 2020);
- Individual Retirement Account (IRA), run on the basis of the agreement concluded between the saving person and investment fund, a subject running stock broking activity, insurance company, bank or any pension fund;
- Individual Retirement Protection Account (IRPA) similarly to IRA run on the basis of the agreement concluded between the saving person and investment fund, a subject running stock broking activity, insurance company, bank or any pension fund (Law Gazette no. 75, 2011).

In the last years in Poland a vast advertisement campaign has been run the goal of which is to make the society aware of the necessity to save for the old age via the voluntary saving forms with a special emphasis on pillar 3 instruments. Unfortunately, their popularity in Polish society is low. Table 3 presents the number of participants and the value of capital accrued products belonging to pillar 3 of the pension system.

At the end of the first half of 2019 Individual Retirement Account IRA had over 1 m participants what was 5.87% of professionally active in Poland. On the other hand, Individual Retirement Protection Account (IRPA) had almost 691 thousand persons constituting 4.06 % professionally active. In the case of Employee Pension Plans (EPP) at the end of 2018 this form of saving included about 426 thousand that is about 2.5% of professionally active⁵. As it is shown slightly above 12% of professionally active citizens in Poland participate in the enumerated pillar 3 programs. The instruments belonging to pillar 3 of the pension system can be divided into two groups:

- forms of voluntary group saving for the pension, organized by the employer with participation of the employees,
- forms of voluntary individual saving.

Employee Pension Plans and Employee Capital Plans belong to the first group, the goal of these programs is a systematic, long-term saving for pension purposes. The

⁵ At the moment of submitting the paper the newest data referring to Employee Pension Plans (EPP) encompassed year 2018.

mechanism of their functioning is similar, therefore the companies which run EPP with the employer's contribution at the level of at least 3.5% and the number of 25% of employees participating the program are absolved from the obligation to create Employee Capital Plans. On the other hand, the companies which do not meet the above criteria of EPP are obliged to create ECP. In accordance with the law act joining EPP is conducted as follows (Schedule: The Act of Employees Capital Plans, 2018):

- From July 1, 2019 for subjects employing at least 250 persons,
- From January 1, 2020 for subjects employing at least 50 persons,
- From July 1, 2020 for subjects employing at least 20 persons,
- From January 1, 2021 for all other subjects and employees of public finance sector.

Table 3. Number of participants and value of capital accrued in pillar 3 of pension system (in B. PLN)

Specification	2010		2011		2012	
	participants	capital	participants	capital	participants	capital
PPE	342 500	5,32	344 643	6,39	358 100	8,35
IRA	792 466	2,73	814 449	2,76	813 734	3,53
IRPA		x		x	496 821	0,05
Total	1 134 966	8,05	1 159 092	9,15	1 688 655	11,93

Specification	2013		2014		2015	
	participants	capital	participants	capital	participants	capital
PPE	375 000	9,40	381 000	10,30	392 600	10,62
IRA	817 651	4,27	824 485	5,03	858 725	5,64
IRPA	496 436	0,12	528 142	0,29	597 560	0,62
Total	1 689 087	13,79	1 733 627	15,62	1 848 885	16,88

Specification	2016		2017		2018		2019	
	participants	capital	participants	capital	participants	capital	participants	capital
PPE	395 600	11,39	395 800	12,64	426 000	12,80	bd.	13,00 *)
IRA	902 615	6,66	951 576	7,96	995 651	8,69	1010387**)	10,17
IRPA	643 112	1,08	690 994	1,71	730 389	2,31	690 886 **)	3,28
Total	1 941 327	19,13	2 038 370	22,31	2 152 040	23,80	1 701 273	26,45

Note: *) – estimated value – Lack of official data at the end of 2019.

***) – data from the first half of 2019.

Source: Own elaboration on the basis of reports of The Polish Financial Supervision Authority from years 2010-2019.

We must notice the limits and payment structure when comparing Employee Pension Plans and Employee Capital Plans. They are presented in Table 4.

Table 4. *Limits and payment structure to EPP and ECP.*

Specification	EPP	ECP
Compulsory base premium	1,5% of salary employer 2% salary employee	max 7% employer
Additional voluntary premium	max 2,5% salary employer max 2% salary employee	max 23.521,50 PLN in 2020 (In accordance with the proclamation of Minister of Family, Labour and Social Policy) ⁶
State budget bonus	250 PLN welcome payment 240 PLN yearly bonus	no
Capital payment	After reaching age 60: 25% one-time payment and 75% in at least 120 installments or 100% of means in at least 120 monthly installments	After reaching age 60 or 55 and gaining the retirement rights 100% of means accrued in EPP Obligatory payment after reaching the age 70 and ending of the employment for the employer running EPP

Source: Own elaboration.

Inheritance of the accrued capital is a very crucial issue in case of EPP and ECP. In case of EPP the payment of collected means is free of capital gains tax and inheritance and gift tax. Whereas, in case of ECP when the employee is married the half of savings belongs to an alive spouse and the rest falls to persons entitled or an heir. In case of couples in informal relationships all means belong to persons entitled or heirs.

Individual Retirement Account and Individual Retirement Protection Account which are directed to individual participants belong to the second group. These instruments have a similar way of functioning. The basic difference is that the IRA participant gains income in the form of 19% capital gains tax exemption when savings are paid after reaching age 60 and payments into the account last at least 5 years. Whereas in case of IRPA the payments into the account can be deducted in a yearly tax return.

When comparing Individual Retirement Accounts and Individual Retirement Protection Accounts one must notice the yearly payments limits. The yearly limit is a maximum amount which can be paid into IRA or IRPA in a given calendar year. For Individual Retirement Account the amount cannot be higher than 3 times the amount of forecasted average monthly salary in the national economy each year. Whereas in case of Individual Retirement Protection Account a yearly limit of payments in a calendar year cannot be more than 1.2 times of forecasted average monthly salary established in budget law project (NNTFI 2020). Table 5 presents the payments limits to IRA and IRPA in years 2012-2020.

⁶ Every year the Minister of Family, Labour and Social Policy defines the amount equal to the sum of additional premium contributed by the participant to a single program.

Table 5. IRA and IRPA payments limit in years 2012-2020

	2012	2013	2014	2015	2016	2017	2018	2019	2020
IRA	10 578	11 139	11 238	11 877	12 165	12 789	13 329	14 295	15 681
IRPA	4030	4231	4495	4750	4866	5115	5331	5718	6 272

Source: Own elaboration

As far as the inheritance issue of the accrued capital is concerned in IRA and IRPA the payment of means from IRA is exempted from Belka's tax (capital gains tax) and inheritance and gift tax (serwisemerytalny, 2020). Whereas payments from IRPA are subject to 10% lump tax.

4. Effectiveness of Pillar 3 Pension System Instruments in Poland

Unfavorable demographic situation not only in Poland but also in whole Europe and unfavorable forecasts for demographic changes in coming years question the effectiveness of the compulsory part of the pension system. In Polish pension system it is presumed that the amount of pension benefits depends largely on individual forethought of future pensioners (Sierocka, 2010). The situation is perfect when the owned pension insurance guarantees reaching financial independence at the old age. It means that pensioner's incomes from pension benefits and private savings enable to fulfill needs not only in a satisfactory way but also to maintain life standard like that in the professionally active period (Olejnik, 2016). Considering the forecasted replacement rate of the last pre-retirement salary by the compulsory pension system part (about 20-30%) additional saving for the professionally inactive period seems indispensable. Instruments of pillar 3 pension system are one of the forms. Will this method of saving for the retirement have a significant influence on the amount of the retirement pension of the average Polish citizen? This elaboration compares the level of pension benefits from instruments of pillar 3 (EPP, ECP, IRA and IRPA). Simulations were conducted in four variants:

Variant 1 – joining EPP at age 26, the remuneration amount – an average remuneration in the national economy, retirement age 65;

Variant 2 - joining EPP at age 45, the remuneration amount – an average remuneration in the national economy, retirement age 65;

Variant 3 - joining EPP at age 26, the remuneration amount – 1.2 of minimum remuneration for work, retirement age 65;

Variant 4 - joining EPP at age 45, the remuneration amount – 1.2 of minimum remuneration for work, retirement age 65.

In every of these options two levels of monthly premiums were considered 3% and 7% of the salary. It is respectively the minimum premium in ECP and the maximum premium in EPP. The following assumptions were made while elaborating the benefit payments simulations from pillar 3 instruments:

1. yearly return rate from capital – 2% - monthly capitalization,

2. increase of salaries – linear trend models were estimated:
3.
 - a. Model of an average salary in the national economy:

$$y = 1466.68 + 148.97 \times t; R^2 = 0.98 \quad (1)$$
 - b. Model of minimum salary for work:

$$y = 342.69 + 86.84 \times t; R^2 = 0.96 \quad (2)$$
4. payment for management in ECP and EPP - 0.5% + 0.1% for positive return rate from capital higher than reference rate.
5. payment for management in case of IRA and IRPA – 2%.

Detailed simulations in particular variants are shown in Tables 6-9. Table 6 presents the capital value which can be paid at one-time by the participant with the assumptions made (25% of collected means). Whereas Table 7 shows the value of installment payment (120 installments) from ECP (75% of capital).

Table 6. Amount of accrued capital in ECP – 25% of total amount of means paid at one-time.

			Joining age to ECP			
			26		45	
			1,2 of minimum salary	Average salary in national economy	1,2 of minimum salary	Average salary in national economy
ECP	employer	1,50%	25644,70	41297,24	10112,69	16503,35
	employee	2,00%				
	employer	3,50%	48821,74	80123,23	18964,25	31682,27
	employee	3,50%				

Source: Own elaboration.

Table 7. Value of pension benefit from ECP 75% of capital In ECP paid in 120 installments.

			Joining age			
			26		45	
			1,2 of minimum salary	Average salary in national economy	1,2 of minimum salary	Average salary in national economy
ECP	employer	1,50%	641,12	1032,43	252,82	412,58
	employee	2,00%				
	employer	3,50%	1220,54	2003,08	474,11	792,06
	employee	3,50%				
	employee	3,50%				

Source: Own elaboration.

The presented simulations show that the level of pension benefit achieved from ECP for the person joining the program at the beginning of professional career and paying the minimum premium will be 10% of the last salary. Persons who join the system at

the age of 26 with the salary at the level of the average national salary and paying the minimal premium, after reaching age 60 will receive one-time payment about 42 thousand PLN and then 120 monthly installments equal about 1000 PLN. In case of raising the premium to the level of 7% of the salary the replacement rate increases up to 20%. The one-time payment would reach about 80 thousand PLN and then 2 thousand PLN paid monthly for the period of 10 years. The situation changes for the middle-aged persons joining the program. In this case the replacement rate falls by 3-6% in case of minimum premiums paid (16.5 thousand one-time payment and 400 PLN in monthly installments for the period of ten years) and to the level of 5-10% with premium of 7% (about 31.6 thousand PLN and about 800 PLN).

The benefit from ECP will be definitely lower when the participant's salary is 1.2 of a minimal salary. Persons who join the system at the age of 26 paying the minimal premium, after reaching age 60 will receive one-time payment about 25 thousand PLN and then 120 monthly installments equal about 640 PLN. In case of 7% premium of the monthly salary they would receive almost 49 thousand one-time payment and about 1220 PLN monthly for 10 years. In case of the person joining the program in age 45 who pays premiums of 3.5% the one-time payment will be 10 thousand and the monthly payment 250 PLN for the period of 10 years. Paying the maximum premium these values would reach 19 thousand PLN and 470 PLN respectively.

When the program participant resigns from the one-time payment, 25% of the collected capital, the monthly benefit will be therefore higher (100% of accrued capital divided into 120 installments). The level of the pension benefit from ECP and EPP paid in installments (120) without a one-time payment of 25% of ECP are shown in Table 8.

Table 8. The level of pension benefit from ECP and EPP paid in 120 installments. Total capital paid in 120 installments.

			Joining age			
			26		45	
			1,2 of minimum salary	Average salary in national economy	1,2 of minimum salary	Average salary in national economy
PPK	employer	1,50%	854,82	1376,57	337,09	550,11
	employee	2,00%				
	employer	3,50%	1627,39	2670,77	632,14	1056,08
	employee	3,50%				
PPE	employer	3,50%	703,95	1177,83	280,04	480,28
	employee	0,00%				
	employer	3,50%	1407,56	2355,07	560,00	960,43
	employee	3,50%				

Source: Own elaboration

In case of EPP the benefits are lower than those from ECP. It is mainly connected with the state budget grants to Employees Capital Plans (the welcome payment of 250 PLN and 240 PLN every year). In variant 1 with the premium at the level of 3.5% of salary the benefit will be about 1200 PLN (11% of the last salary). Whereas with premiums at the level of 7% the participant can expect about 2350 PLN (22% of the last salary). In variant 2 the benefits will be respectively: 480 PLN (6%) and 960 PLN (13%). In variant 3 the participants will get the benefit at the level of 700 PLN monthly with premium 3.5% and 1400 PLN in case of premium equal 7%. In relation to the last salary these values will constitute 9% and 18% respectively. In case of the last variant the situation will be the most unfavorable for the participant. Joining the program in the age 45 and getting the minimum salary results in a very low pension benefit at the level of 280 PLN in case of minimum premium and 560 PLN when 7% of the salary is saved.

Individual Retirement Accounts and Individual Retirement Protection Accounts are another pillar 3 instrument. Table 9 presents benefits values from IRA and IRPA.

Table 9. *The level of pension benefit from IRA and IRPA*

		Joining age			
		26		45	
		1,2 of minimum salary	Average salary national economy in	1,2 of minimum salary	Average salary national economy in
IRA	3,50%	585,86	977,46	254,18	436,05
	7,00%	1171,71	1954,92	508,37	872,09
IRPA	3,50%	527,27	897,72	228,77	392,44
	7,00%	1054,54	1759,43	457,53	784,88

Source: Own elaboration.

In case of IRA in variant 1 the participant may expect about 1000 PLN per month when premium is 3.5% and about 2000 PLN for premium equal 7%, what constitutes respectively 9.5% and 19% of the last remuneration. In variant 2 these benefits are much lower – slightly above 400 PLN for a minimum premium and almost 900 PLN for the higher premium. Variant 3 shall allow to reach 600 PLN for premium 3.5% of salary and almost 1200 PLN for 7% of the salary. In variant 4 the benefit equals 250 PLN for the lower premium and 500 PLN for the higher.

The analysis of the level of benefits from IRPA shows the fact that the benefits from this instrument are lower than in case of IRA. But we have to bear in mind that premiums for IRPA can be exempted from the tax what is the additional income of the program participant. In variant 1 this income equals about 21.8 thousand PLN (total amount of tax refund in the whole period of participation in the program – 40 years), in variant 2 – 43.7 thousand PLN, in variant 3 – 13 thousand PLN, and in variant 4 - about 26 thousand.

This analysis indicates that products included in pillar 3 can support the compulsory part of the pension system. It has to be noticed that they will not guarantee the retirement pension similar to the last salary.

5. Conclusions

Forecasts of pension benefits achieved from pillar 3 allow to state that these products are solutions which can contribute to reduce the difference between the amount of the last pre-retirement salary and pension benefits. We have to notice that our pension benefits depend on three factors (Gwiązdowski, 2012):

- the level of the national income in the period during our retirement,
- proportion between the professionally active generation and the retired,
- division of the national income between the pensioners and the professionally active generation which makes this income.

The simulations presented show that the influence of pillar 3 instruments on the level of retirement pensions will not be significant and largely it will depend on the age of joining the system. Besides, with a great probability it has to be assumed that a greater part of systems participants will pay the minimal contributions, what means saving smaller amounts and as a consequence, it will result in lower pension benefits.

The necessity of as early as possible joining the program aiming at collecting pension savings is indicated by e.g., Clark and d'Ambrosio who note that a late decision referring to start saving the means for the old age can lead to collecting too small capital and in this way not to reach the expected goal (Clark and d'Ambrosio, 2002).

What is more, a proper economic knowledge referring to financial markets and investment funds and the knowledge of pension systems is an indispensable condition. This education should focus on making the Polish aware of necessity to collect voluntary pension savings (Kowalczyk-Rólczyńska, 2017). It should also refer to personal savings management in a long-time horizon, including the knowledge of building individual investment wallet which will allow to accrue capital ensuring a decent life level at the old age.

References:

Chorkowy, B. 2018. Obowiązkowa część systemu emerytalnego–jaka będzie wysokość emerytury przeciętnego Polaka?, [Compulsory part of pension system – what will be pension amount of average Polish citizen], „Studia Ekonomiczne t. 349”, Katowice 2018, p. 118.

- Clark, R., d'Ambrosio, M. 2002. Saving for Retirement: The Role of Financial Education, TIAA-CREF Institute Working Paper 4-070102-A. Published on-line in Retirement Implications of Demographic Family Change Symposium, Society of Actuaries.
- Cristea, M., Thalassinos, I.E. 2016. Private Pension Plans: An Important Component of the Financial Market. *International Journal of Economics and Business Administration* 4 (1), 110-115, DOI: 10.35808/ijeba/95.
- Gruszecki, T. 2001. Próba określenia III filara, [Attempt to define pillar 3], *Nowe Ubezpieczenia* nr 7(33)/2001.
- Gwiadzowki, R. 2012. Emerytalna katastrofa i jak się uchronić przed jej skutkami, [Pension catastrophe and protection against its results], Wydawnictwo Zysk i s-ka, Warszawa, p. 23.
- Jabłońska-Porzuczek, L., Łuczka, W. 2016. Powszechny system emerytalny a aktywność zawodowa emerytów, [Universal pension system and the professional activity of pensioners], Difin, Warszawa, s. 73.
- Kowalczyk-Rólczyńska, P. 2017. Czynniki warunkujące posiadanie dobrowolnych oszczędności emerytalnych przez gospodarstwa domowe w Polsce; [Factors conditioning voluntary pension savings by households in Poland] [in] *Wiadomości ubezpieczeniowe* nr 2, Warszawa, p. 54.
- Marcinkiewicz, E. 2018. Uwarunkowania rozwoju dobrowolnych programów emerytalnych. Perspektywa makro- i mikroekonomiczna, [Development conditions of voluntary pension programs. Macro and micro economic perspective], Monografie Politechniki Łódzkiej, Łódź, p. 5.
- Olejnik, I. 2016. Zabezpieczenie emerytalne. Modele i determinanty zachowań polskich gospodarstw domowych, [Pension protection. Models and determinants of Polish households], Wydawnictwo UEP, Poznań, p. 19.
- Pieńkowska-Kamieniecka, S. 2015. Automatyczne plany emerytalne w systemie dodatkowego zabezpieczenia emerytalnego – przesłanki tworzenia i funkcjonowania, [Chosen aspects of insurance sector and additional pension saving] [in] red. Kawiński M., *Dobezpieczenie społeczne – idea i kontynuacja*, SGH Warszawa, p. 158.
- Sierocka, I. 2010. Pracownicze programy emerytalne [Employee pension plans], Wydawnictwo Temida, Białystok, p. 15.
- Ustawa z dnia 25 marca 2011 r. o zmianie niektórych ustaw związanych z funkcjonowaniem systemu ubezpieczeń społecznych (Dz. U. Nr 75, poz. 398) [The Act of March 25 2011 on change of some acts connected with social insurance system functioning (Law Gazette no. 75 pos. 398)].
- Ustawa o Pracowniczych Planach Kapitałowych z dnia 04 października 2018 r. Dz. U. z dnia 28.11.2018r. poz. 2215 (The Act of Employees Capital Plans of October 4 2018 Law Gazette of 28.11.2018 pos. 2215).

Internet sources:

<https://ec.europa.eu/eurostat/tgm/table.do?tab=table&plugin=1&language=en&pcode=tps00200>.

<https://www.mojeppk.pl/>.

<https://www.nntfi.pl/finanse-po-godzinach/nowe-limity-ike-ikze>.

<https://serwisemerytalny.rp.pl/pieniadze-z-ike-zostana-w-rodzinie>.