The Early Retirement Age Increment in Case of Republic of Srpska Pension Fund

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Abstract

The worldwide trends of increased life expectancy and decreasing fertility are considered to be the main driving forces of pension funds sustainability crisis. Different countries are facing its pension fund's financing problems on different ways, but in general there is evident trend of retirement age rising, especially among developed countries. The Republic of Srpska is currently having one of the lowest pensionable age limits in Europe. At the same time its pension fund is for years operating with significant negative financial result. In this paper we will estimate and analyse the effects of retirement age limit rising in Republic of Srpska in order to observe will the rising of early retirement age on 62 years old bring only short-term or long-term results.

Keywords: Pension sustainability, Retirement age, Parametric reforms effects

Introduction

The pension funds worldwide are facing sustainability problems. The main driving trends of pension crisis are considered to be increasing life expectancy, declining fertility and earlier retirement (Barr & Diamond, 2009). The countries have for decades led debates about adequate reform measures that could ensure the financial sustainability of pension system and at the same time not threaten the living standard of elder people. The pension reforms that have been launched by many countries in last few years usually include introduction of savings in pension systems, the changes in the way the pension entitlements are calculated and, inevitably, the increment of retirement age (OECD, 2013). The trend of retirement age rising is still seen as an effective solution for growing pension funds' unsustainability. Therefore the German Central Bank recently proposed the rise of retirement age from 67 to 69 years old, while there are similar tendencies in UK. The problem with adaptation of these proposals is the political willingness. The elder people make the majority of electoral in ageing societies and the most of the developed countries already have got across and become the gerontocracies (D'Amato & Galasso, 2002).

In the Republic of Srpska, by current Law, the retirement is allowed with 57 years old for males and 55 for females and it will gradually increase on 60/58 years old until 2025 (The Law on Pension and Disability Insurance in Republic of Srpska 2011). This way the Republic of Srpska is one of the countries with the lowest retirement age in Europe, while at the same time its pension fund faces growing discordance between contributions and net pension costs. The Republic of Srpska is for a long period of time having a problem with high unemployment which was around 25,2% in 2015[1] (Republic of Srpska Institute of Statistics, 2015). All this inspired us to analyze effect retirement age increment on pension fund sustainability, in order to be able to give adequate suggestion to policy planers in Republic of Srpska.

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[1] According to 2016 labor force survey.

The effects of retirement age increment will be estimated using the classical actuarial projection model previously adapted to Republic of Srpska Pension and Disability Insurance Fund (hereinafter Fund PIO RS). In this paper we will state the basic concepts and limitations of actuarial projection model for Fund PIO, while the main accent will be on the calculation of retirement age increment effects and their comparison with the earlier obtained projections with current retirement age assumption.

1. Pension and Disability Insurance Fund of Republic of Srpska

The Republic of Srpska is highly autonomous entity of Bosnia and Herzegovina. It has its Constitutions, Laws, Government, Institutions and it conducts its independent economic and social policy. The Fund PIO conducts the pension policy of Republic of Srpska, and according to Laws of Republic of Srpska (The Law on Pension and Disability Insurance in Republic of Srpska 2011) it is organized as public pay as you go pension scheme. The scheme is based on the principles of mutuality and solidarity, while participation is mandatory for all employees, self-employed and registered farmers on the territory of Republic of Srpska.

The revenues of Pension Fund are coming from wage contributions, voluntary insurance contributions, other Fund's activities and budget transfers. Current contribution rate in Republic of Srpska is 18.5% on gross wage (The Law on contributions in Republic of Srpska, 2012) and contributions are main source of Pension Fund incomes, while significant budget transfers are covering war veteran pension benefits that are not acquired on the basis of contribution payment and insurance service.

The Pension Fund of Republic of Srpska provides its participants the right on pension benefit in case of old age, disability and in case of pensioner death, pension benefit is assigned to its dependent family members. There are two conditions that insured must satisfy in order to be eligible for an old age pension benefit. Those conditions are the age of insured and pension (insurance) service.

The insurer is qualified for an old age pension when:

- she is 65 years old and has 15 years of insurance service

- she is 60 years old and has 40 years of pension service (for males)

- 58 years old and has 35 years of insurance service (for females).

These norms are still not used, because of transition period until 2025 that was designed for passage to these rules together with the creation of Pension and Disability Law from 2011. These transitive norms are given in Table 1 that follows.

Table 1 - Conditions for old age pension according to 2011 Pension and Disability Law in Republic of Srpska (transition period)

Year	Art. 41 and 177 (transition period)			Art. 42/1 and 178/1 (transition period)		Art. 42/2 and 178/2 (transition period)	
	Age in years and months		Years of insurance service	Age in years and months	Years of pension service	Age in years and months	Years of insurance service
	Sex male	Female		sex male		sex female	
2012	65	60/4	15	-	40	-	35
2013	65	61	15	56	40	54	35
2014	65	61/8	15	56/4	40	54/4	35
2015	65	62/4	15	56/8	40	54/8	35
2016	65	63	15	57	40	55	35
2017	65	63/8	15	57/4	40	55/4	35
2018	65	64/4	15	57/8	40	55/8	35
2019	65	65	15	58	40	56	35
2020	-	-	-	58/4	40	56/4	35
2021	-	-	-	58/8	40	56/8	35
2022	-	-	-	59	40	57	35
2023	-	-	-	59/4	40	57/4	35

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2024	-	-	-	59/8	40	57/8	35
2025	-			60	40	58	35

(Source: The Law on Pension and Disability Insurance in Republic of Srpska 2011)

The pension benefit amount depends on the level of wage earned during working period and on length of contribution period. Since 2011 Law on Pension and Disability Insurance the old age pension benefit amount is calculated using point method, where pension benefit amount is obtained when personal insured person's points are multiplied with value of general point valid at that moment (The Law on Pension and Disability Insurance in Republic of Srpska 2011).

1.1. The sustainability projections

The current Law on Pension and Disability Insurance passed in 2011 as a result of the Government Working group for Pension Reform in 2010 analysis of different pension reform possibilities (The Working Group for Pension System Reform, 2010). In this document, the long term projections of sustainability of Fund PIO were made for the first time. The Projections of dependency ratio and net financial result were not optimistic, so the increment of retirement age and the change of pension benefit entitlement rules were suggested as a reform steps. After the imposition of new, 2011, Law the Government did not carried out the long term analysis of Fund PIO sustainability, while dependency ratio continued to worsen (Figure 1)

Figure 1 – Dependency ratio for Fund PIO RS from (1996 – 2015)
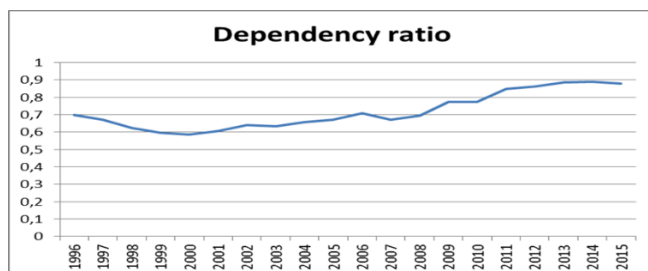
(Source: Authors)

The growing number of pensioners in respect to employees who support their pensions brings unsustainability to Pay-as You-go pension system. As a result of this, the Fund PIO is having growing negative net financial result which is presented as a gap between net pension benefit costs and contributions on Figure 2.

Figure 2 - Net pension benefits and contribution revenues as share of GDP, 2001-2015
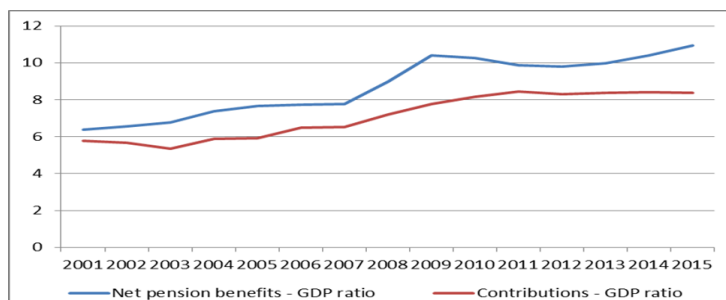
(Source: Authors' calculation and official data sources[1])

As far as it is known to the authors, the first projections of Fund PIO sustainability and the first actuarial model adopted for Fund PIO of Republic of Srpska were developed in 2016 (Bosnjak, 2016). This actuarial projection model is the classical actuarial open group model, adapted to scarce cross-section data on registered employees and pensioners in Fund PIO RS. In original article, the base year for projections was 2014, while dataset contained the cross-sectional information on age, sex, value of salary or pension, date of employment or retirement and type of contract for all employees and pensioners from end of December 2014. Further, due to nonexistence of mortality tables for republic of Srpska, as in original article we used the mortality tables of Republic of Serbia (Statistical Office of the Republic of Serbia, 2014), while the model assumes that the whole population of Republic of Srpska will develop according to official projections made for the purpose of 2010 Strategy of pension reform, which assume that fertility rate in Republic of Srpska in projected period will decrease from 1,3 to 1. Using the same methodology presented in article we had repeated the calculations with the updated dataset from end of December 2015, thus using the 2015 as base year for projections. These updated projections are presented on Figure 3.

Figure 3 – Projected number of employees and pensioners in Fund PIO RS (2015-2066)
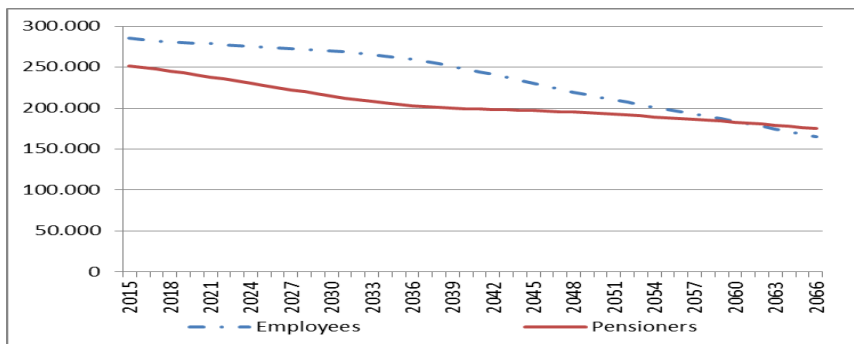
(Source: Authors)

As we can see from the Figure 3, the gap between number of employees and number of pension benefit users will gradually decrease leading to unsustainability growth which is visible through dependency ratio projections on Figure 4.

Figure 4 – Dependency ratio projections (2015-2066)

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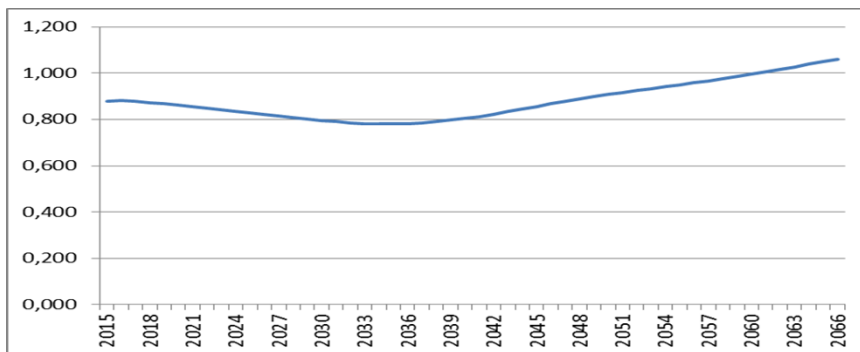
[1] (The Audit's Reports of The Pension and Disability Insurance Fund of Republic of Srpska), (The Pension and Disability Insurance Fund of Republic of Srpska), (Central Bank of Bosnia and Herzegovina database)

(Source: Authors)

As we can see the projections indicate that the sustainability will worsen in future. There is ongoing debate about reform steps that could improve the future expectations and ensure the long-term sustainability of Fund PIO. In following part, we will present and analyze two frequently addressed suggestions.

2. Pension reform suggestions

Generally, there are multiple measures and their combinations that have been proposed as pension crisis solutions by different researchers and policy planners for different situations. The scientists agree that there is no unique and the best solution for pension system design given that there are multiple objectives that one pension system has to meet. Barr and Diamond (Barr & Diamond, 2009) state that those objectives are consumption smoothing, insurance, income redistribution, poverty prevention, fairness, neutrality, sustainability, etc. Many of these objectives cannot be fulfilled at the same time, so society and pension planners have to make choice on which fundaments will they build their pension system.

The same choices must be made when we speak about pension system reform. The society has to decide on which objectives does it want to focus on and to undertake reform steps into that direction. The newest steps in pension system reform of developed countries are exposed in OECD pensions at a Glance overview of pension systems (OECD, 2013), where it is stated that in last few years almost all countries have undertaken some reform steps. Most commonly those were parametric reforms like retirement age increase, inclusion of new population cohorts into pension insurance scheme (like agriculture workers, self-employed, housewives…) or change of pension benefits value calculation methodology.

2.1. The retirement age rising

Given that we are operating with actuarial projection model which is adapted only for calculation of future number of employees and pension benefit users and on the basis of previous discussion regarding the pensionable age development trends, we can come out with simple suggestion for parametric reform that is imposing itself. We simply suggest the lifting of age limit for old age pension retirement from 60 years for males and 58 for females to 62 years old for both sexes and 40 years of pension insurance service or 65 years old and 15 years of pension insurance service. This would prolong the period of contributions accumulation and thus improve the life standard of pensioners.

Although highly unpopular, this measure is necessary in order to stabilize the pension fund's financing gap and provide the higher pensions. Other, wealthier and more developed European countries have increased the pensionable age even above 62/65 years old and many of them are to gradually set retirement age to 67-70 years old in next decade. The opponents of this reform measure often claim that the higher retirement age is preventing the employment of young people, since the work places are being "occupied" by older, nonproductive workers for longer periods. Nevertheless, many researchers have been studying this problem and they claim that the common belief that early retirement will set free the work places for younger workers and reduce the youth unemployment is not consistent with empirical evidence.

Peter Diamond (Diamond P. , 2006) in his study found that the evidence over many decades' shows that early retirement does not reduces unemployment. The same results are presented for youth unemployment in Gruber and Wise conference report (Gruber & Wise, 2010), which is the collection of researches for set of developed countries on the effects of early retirement policies on youth employment. These and many other researches support the idea that the size of economy and number of work places is not fixed, but that it grows and develops. Also there are findings that the higher number of older workers in economy is connected with job creation, due to older workers experience and increment of labor force supply (Diamond P. , 2006).

In order to analyze the effects of retirement age increment on employees and pensioners expected numerosity, we will have to modify the relevant retirement probabilities which will be directly influenced by retirement age change. Therewith, we will also have to modify and recalculate the probabilities of old age retirement, disability retirement and family pension retirement due to our proposal that early retirement should be raised on 62 years old for both sexes. This reform suggestion will influence the future number of pension benefit users and employees, too.

2.2. The projections under new retirement age

In this section, we will apply the proposed increment of early retirement age on our projection model in order to observe its effects and their dynamics. As we mentioned it is necessary to modify the old age retirement probabilities in accordance with the parametric reform we suggested. The calculation methodology of new retirement probabilities and their value are explained here, while the calculation methodology of pension benefit users' numerosity projections and employees remains the same. Here we present the influence of retirement age of 62 years old on dependency ratio and financing gap of Fund PIO of Republic of Srpska.

The most important change in calculation of projected number of pension benefit users according to new early retirement age of 62, we had suggested, is to estimate new old age retirement probabilities. We calculated those probabilities as ratios between adjusted average number of retired persons in last three years and registered insured persons in 2015 for each age and sex group separately. The data we use is the same data we used for dependency ratio projections, while the methodology is the same as in Bosnjak paper (Bosnjak, 2016), apart from the adjustment of average number of newly retired to the change in retirement age we suggest. This adjustment is done on such way that number of people retired in age from 55 to 61 was reduced on 5% of total average number of retired males for males and 1% of average number of retired females for females. We have chosen to leave the possibility of earlier retirement for certain number of persons because there are some groups of protected professions, who are allowed to retire earlier as miners, physical workers, etc. The percentages of workers who we "allowed" to retire earlier than 62 is taken from official employment by industry sectors 2015 data, and they represent the percentage of employed in mining sector in total number of employed persons in Republic of Srpska (Republic of Srpska Institute of Statistics, 2016). The Table 2 gives us overview of used data and obtained modified probabilities of old age employment.

Table 2 – The modified probabilities of old age retirement calculation

Age at retirement	Adjusted average number of newly retired		Distribution of insured persons in base year (2015)		Modified probabilities of old age retirement	
	Males	Females	Males	Females	Males	Females
45	0	0	3450	2606	0	0
46	0	0	3667	2625	0	0
47	0	0,333333	3536	2692	0	0,000124
48	0,333333	0,333333	3751	2909	8,89E-05	0,000115
49	1	0	3842	3014	0,00026	0
50	9,666667	1	4008	3128	0,002412	0,00032
51	4,333333	0,333333	3731	2931	0,001161	0,000114
52	1,333333	1,666667	3860	3152	0,000345	0,000529
53	1,666667	8,333333	4015	3201	0,000415	0,002603
54	7,666667	85,66667	3901	3146	0,001965	0,02723
55	24	1	3953	3194	0,006071	0,000313
56	25,6	2	3813	2869	0,006714	0,000697
57	25,6	3	3648	2599	0,007018	0,001154
58	25,6	4	2938	2112	0,008713	0,001894
59	56,2	5	2862	1891	0,019637	0,002644
60	56,2	6	2407	1579	0,023349	0,0038
61	56,2	7	2058	1389	0,027308	0,00504
62	238,3333	335,3333	1615	975	0,147575	0,343932
63	200,6667	161	1270	788	0,158005	0,204315
64	215	135,6667	956	495	0,224895	0,274074
65	2495,333	373,6667	787	393	0,950806	0,950806
66	109	24,66667	307	96	0,355049	0,256944
67	56,33333	15,66667	165	41	0,341414	0,382114
68	37,33333	8,333333	129	25	0,289406	0,333333

69	18,33333	8,666667	76	15	0,241228	0,577778
70	20,33333	5,333333	40	14	0,508333	0,380952
71	12	6	25	12	0,48	0,5
72	10,33333	5,333333	20	8	0,516667	0,666667
73	7,666667	0,333333	17	3	1	1

(Source: Authors)

As we already said, the projections calculation methodology remains the same. The only change is the modification of old age retirement probabilities according to new early retirement rule. Here, in Table 44 we give the results of our modified projections of total number of employees and pensioners for each pension benefit type.

The Figure 5 gives us the overview of projections of employees and pension benefit users both, with current early retirement age and the one we suggested of 62 years old. The detailed values of projected numbers are given in Table 3, while this graphical representation enables us to compare the effect of introduction of early retirement age of 62 with current early retirement age.

Figure 5 - The employees and pension benefit users' projections with current and 62 early retirement age
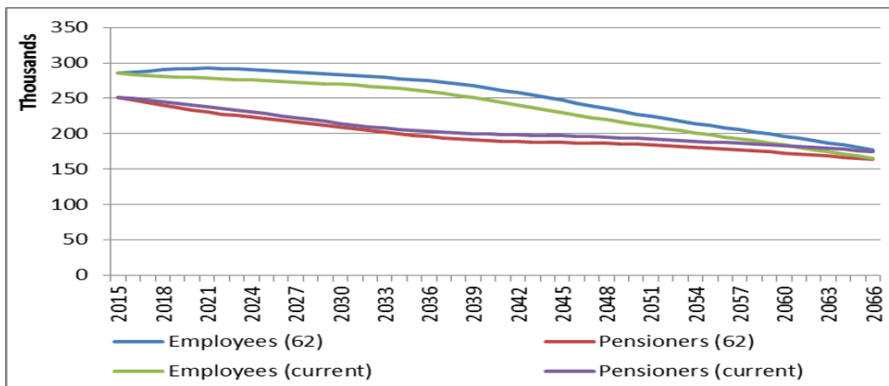
(Source: Authors)

In order to observe the effect of introduction of early retirement age of 62 on pension fund's sustainability, we should also observe new dependency ratio movement. Figure 6 gives us both, the "old" dependency ratio projections and "new" – with early retirement age of 62, dependency ratio projections.

Figure 6 - The dependency ratio projections with current and 62 years old retirement age
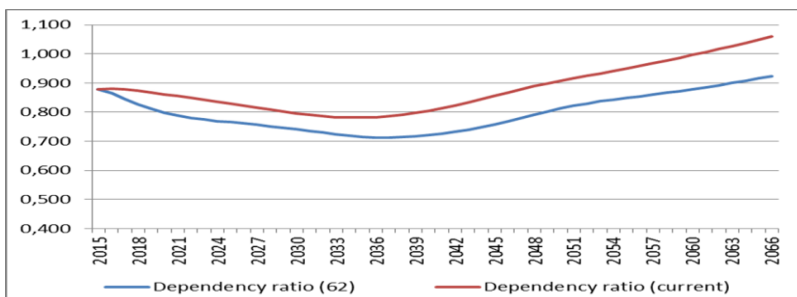
(Source: Authors)

From those figures we can conclude that raising early retirement age on 62 year old both, for males and females would have instantaneous positive effect on pension fund's sustainability. This positive effect is present during the whole projections period and it is transmitted through the growth of employees' number and decrease of pensions benefit users number in future. This number of employees rise and the number of pension benefit users shrink is the best visible on Figure 5. The combination of these two effects results with substantial dependency ratio stabilization, which is represented on Figure 6.

Table 3 – The projections of employees and pensioners number with early retirement age of 62 years old

Year	Employees			Pension benefit users				Dependency ratio
	Males	Females	All	Old Age	Disability	Family	All	
2015	164012	121634	285646	133408	36583	81195	251186	0,879
2016	163502	123417	286919	130513	36124	81224	247861	0,864
2017	163407	125138	288545	127470	35698	80831	244000	0,846
2018	163406	126675	290081	124407	35285	80208	239899	0,827
2019	163287	128107	291394	121775	34924	79607	236307	0,811
2020	162923	129225	292148	119476	34574	79059	233109	0,798
2021	162416	130028	292444	117565	34254	78489	230308	0,788
2022	161644	130517	292161	115881	33921	77988	227790	0,780
2023	160794	130717	291511	114482	33600	77592	225675	0,774
2024	159767	130716	290482	113152	33276	77101	223529	0,770
2025	158713	130558	289272	111801	32950	76632	221384	0,765
2026	157647	130308	287954	110233	32625	76224	219082	0,761
2027	156627	130127	286754	108674	32310	75832	216817	0,756
2028	155588	129881	285469	107000	32005	75496	214501	0,751
2029	154540	129645	284185	105190	31689	75210	212089	0,746
2030	153529	129438	282967	103393	31390	74886	209669	0,741
2031	152461	129214	281675	101480	31104	74595	207179	0,736
2032	151422	129033	280456	99538	30835	74269	204642	0,730
2033	150351	128858	279210	97628	30574	73942	202144	0,724
2034	149267	128646	277912	95929	30336	73589	199854	0,719
2035	148011	128317	276328	94358	30085	73211	197654	0,715
2036	146689	127876	274565	93130	29837	72784	195751	0,713
2037	145185	127253	272438	92209	29588	72331	194128	0,713
2038	143589	126408	269997	91557	29350	71840	192747	0,714
2039	141863	125402	267265	91079	29108	71310	191497	0,717
2040	140063	124277	264339	90857	28865	70735	190457	0,721
2041	138177	123010	261187	90828	28630	70118	189576	0,726
2042	136235	121625	257860	90942	28397	69471	188810	0,732
2043	134286	120136	254422	91193	28165	68799	188157	0,740
2044	132283	118589	250872	91584	27928	68109	187621	0,748
2045	130258	116930	247188	92189	27685	67413	187287	0,758
2046	128168	115114	243283	92820	27434	66717	186970	0,769
2047	126057	113293	239350	93432	27173	66027	186632	0,780
2048	123958	111474	235432	94024	26907	65350	186281	0,791
2049	121914	109633	231546	94452	26640	64692	185783	0,802
2050	119955	107873	227828	94705	26379	64057	185141	0,813
2051	118076	106188	224264	94740	26118	63450	184307	0,822
2052	116298	104573	220871	94556	25860	62873	183289	0,830
2053	114595	103076	217671	94241	25611	62334	182186	0,837

2054	112932	101616	214548	93703	25363	61830	180895	0,843
2055	111342	100231	211573	93071	25113	61361	179546	0,849
2056	109777	98867	208645	92462	24868	60930	178260	0,854
2057	108192	97429	205621	91726	24617	60533	176876	0,860
2058	106618	96021	202640	90958	24356	60169	175484	0,866
2059	105044	94578	199622	90226	24099	59835	174161	0,872
2060	103422	93071	196493	89370	23837	59526	172734	0,879
2061	101797	91586	193383	88471	23564	59238	171272	0,886
2062	100137	90078	190215	87582	23281	58964	169827	0,893
2063	98432	88534	186966	86667	22992	58700	168359	0,900
2064	96705	86980	183685	85703	22699	58439	166841	0,908
2065	94978	85426	180404	84698	22401	58176	165275	0,916
2066	93246	83867	177113	83661	22100	57903	163665	0,924

(Source: Authors)

At this point, it is important to mention that the methodology we suggested for adaptation of Bosnjak (Bosnjak, 2016) actuarial model for Fund PIO RS projections to retirement age of 62 relies on quite simple assumption. The only modification we have taken into consideration is the modification of old age retirement probability, where we have taken the retirement age of 62 in consideration. In reality, it is quite probable to expect that the certain number of persons will switch to disability retirement since being unable to retire earlier with old age pension benefit. Therefore, it is realistic to assume that the positive effect of retirement age growth will be smoothed due to disability retirement growth.

This incorporation of potential disability retirement growth as a reaction on retirement age rise is a guideline for further research on this topic.

Conclusion

The pension funds worldwide are facing sustainability problems due to increased life expectancy, low fertility and early retirement age. The different societies have approached these problems from different sides, but in most of developed countries the first step was a retirement age increment.

The Republic of Srpska is currently having one of the lowest retirement age boundaries in European countries. The females are allowed to retire if 55 years old and males if 57 years old and having 35/40 years of pension insurance service, respectively. Our suggestion for pension reform in this paper was simple increment of pensionable age on 62 years old for both sexes. We have tested this suggestion using actuarial projection model previously adapted for Pension and Disability Insurance Fund of Republic of Srpska.

The obtained projections of future number of employees and pension benefit users show us unambiguously that retirement age rising will improve the Fund PIO sustainability by increasing the number of employees and reducing the number of pension benefit users.

Still, these results demand for further research given that we have not taken in consideration the possibility that retirement age increment will modify disability retirement probabilities, too. It is quite probable that certain number of people will still retire before age of 65 using the right on disability retirement.

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