DRAFT - Country fiche on pensions for the Republic of Slovenia - the 2015 round of projections for the Ageing Working Group – 3.12.2014

Contents

1 Overview of the pension system

1.1 Description – the pension system after reform in 2013

Pension and disability insurance system in Republic of Slovenia is based on inter-generational contract and is therefore a pay-as-you-go system. The system is uniform and mandatory for all employed persons and other persons generating certain income from employment or other gainful activity, while inactive persons can join the system voluntarily. They are all included in the compulsory insurance scheme under the same act, i.e. the Pension and Disability Insurance Act (ZPIZ-2), and covered by the same insurance provider - the Institute of Pension and Disability Insurance of Slovenia (ZPIZ). The system includes also occupational pension scheme and second non mandatory private scheme.

Compulsory insurance – first pillar

The compulsory insurance scheme includes old age and early pensions, disability pensions, survivors', widow/ers' and partial pensions. The system covers also the disability insurance rights[1], rights on assistance and attendance allowance, part of a widow/ers' pension and other rights (annual grant). Outside the compulsory insurance the system covers also special rights for farmers and military pensions, part of the military widow/ers' pension, advance pension payment and other pensions and rights under special acts. The structure of pensioners according to the type of pensions is changing, with increasing share of old age and early pensioners (around 70% in 2013) and decreasing share of disabled pensions (less than 15 % in 2013).

The main changes in the pension reform in 2013 related to old age and early pensions and developments are summarized below:

- The right to an old-age pension depends on two parameters which must be met cumulatively; the age of the insured person and the pension qualifying period. The conditions for acquiring an old-age pension will be equalized for men and women[2].
- The retirement age was raised to 65 for both genders. But the reform provides different transitional periods to take into account various pension qualifying periods into consideration (the table below).

Table 1 – Transitional periods for different pension qualifying periods

Transitional periods	The transitional period to reach 65 retirement age and 15 year contribution period		The transitional period to 65 retirement age with at least 20 years of contribution*		The transitional period to 60 retirement age to 40 years of contribution[3]		
	Men	Women	Men	Women	Men	Women	Contribution period, women
2013	65Y	63 Y 6M	63Y 6	61Y 6M	58Y 4M	58Y	38Y 4M
2014		64Y	64Y	62Y	58Y 8M	58Y 4M	38Y 8M
2015		64 Y 6M	64Y 6	62Y 6M	59Y	59Y 8M	39Y
2016				63Y	59Y 4M	59Y	39Y 4M
2017				63Y 6M	59Y 8M	59Y 4M	39Y 8M
2018				64Y		59Y 8M	
2019				64Y 6M			

Data source: **Pension and Disability Insurance Act (ZPIZ-2)**
* When reaching the retirement age 65 for both sexes in 2020, this provision will be abolished.

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1 The disability insurance include occupational rehabilitation, reassignment work on a part-time basis for no less than four hours daily or twenty hours weekly, reimbursement of travel expenses and benefits from disability insurance: for the duration of occupational rehabilitation, temporary benefit, right to disability benefit and right to partial benefit .
2 This is reasonable due to the longer lifespan of women and consequently longer pension receipt span, as well as the necessity to equalise the genders formally. The different conditions for retirement in the past contributed to lower pensions for women due to the shorter pension qualifying period.
3 Particularly for persons who began to work early in life – the effect of the structural changes in the economy in the long run

- In exceptional circumstances the retirement age could be lower due to child care, compulsory military service or inclusion in the insurance scheme before the age of 18[4].
- Actual retirement age[5] is still low and in December 2013 reached 58 years and 4 months for women and 60 years and 9 months for men.
- The time spent in pension is increasing. In 2000, the average time spent in retirement for women was 17 years and 1 month, while in the year 2013 it was 22 years and 8 months. Similarly in 2000 average time spent in retirement for men was 14 years and 9 months, while in 2013 it was 16 years and 8 months. Particularly by women, the time spent in pension increased twice as much as increase of the retirement age. In the case of men, the difference is not so large, however the retirement age for men actually decreased.
- The contribution period is gradually increasing; however it is below targeted 40 years. The impact of the reform is evident in the table below. The data include the basic legislation (special acts are all excluded i.e. military, police etc.) for standard old age pensioners.
- The particular positive impact of the reform however is that in the last months of 2014 the inflow of new pensioner according to the conditions of the 2012 reform was zero and in 2013 40% lower than inflow in 2012.

Table 2 – The results of the reform – new old age pensioners in 2013

Time	Men				Women			
According to the law	Number	Average age	Average contribution period	Average net pension EUR	Number	Average age	Average contribution period	Average net pension EUR
-before the reform	5852	60Y 6M	38Y 0M	664,37	4807	58Y 2M	36Y 0M	649,17
-after the reform	1244	59Y 11M	38Y 9M	589,31	814	58Y 3M	37Y 4M	650,95

Source: **ZPIZ**
Note: The figures included in the projection tables differ because of different calculation

- Ratio of insured persons to pensioners is decreasing: from 1.8 in year 2000 to 1.38 in year 2013.
- The pension base for an old-age pension or an early pension takes into account the period of 24 most favorable consecutive years of insurance from 1 January 1970 onwards. The transition period started 2013 with the 19 years and will last until 2019 with annual one year increase.
- The lowest pension base is set by 76.5% of the gross wages deducted by average rate of paid taxes and contributions. The maximum is limited to 4 times of the minimum.
- Accrual rate is set by 1.25 % for each year after the 15 contribution years (26% for men, 29% for women) and reaches for 40 contribution years 57.25% of the pension base for men and 60.25% of the pension base for women. There is special transition period for women until 2022[6].
- The new legislation provides for early retirement before the age of 65. An insured person may acquire the right to early retirement at the age of 60, provided that they attain at least 40 years of the pension qualifying period. However, it must be emphasized that due to the renewed system of permanent deductions (in transition period fixed to 5 years), early retirement will affect the amount of pension received. A pension, with regard to the pension qualifying period achieved will be lowered by 0.3% (maximum 18%) for each month of retirement before the age of 65. Since the statutory age will be raised gradually to 65, and that the pension qualifying period for early retirement will also be raised gradually (for women from 38 years to 40), deductions are determined correspondingly.
- The positive stimulation for staying active longer time is provided with new bonuses. The pensioner could receive 1% amount for each tree months of work after fulfillment of 60 years of age and completion of 40 years of pensionable service without purchasing years (including transitional periods), if he remains covered by the Compulsory Insurance maximum for 3 years (12%). In the addition an insured person who meets the conditions for an early or old-age pension

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[4] See Country Fiche on Pension Projections, Slovenia, 2013.
[5] The retirement age for entering the old age pension without other pensions and rights under special acts
[6] See Country Fiche on Pension Projections, Slovenia, 2013.

and remains insured will receive monthly payments of 20% of the early or old-age pension, but not beyond the age of 65.

Table 3 – Statutory retirement age, earliest retirement age and penalties for early retirement

		2013	2020	2030	2040	2050	2060
Men - with 20 contribution years	statutory retirement age	63Y 6M	65	65	65	65	65
	earliest retirement age	:	:	:	:	:	:
	penalty in case of earliest retirement age	/	/	/	/	/	/
	bonus in case of late retirement	/	/	/	/	/	/
Men - with 40 contribution years	statutory retirement age	58Y 4M	60	60	60	60	60
	earliest retirement age	:	:	:	:	:	:
	penalty in case of earliest retirement age	18% (early pension)	18%	18%	18%	18%	18%
	bonus in case of late retirement	12% (old age pension)	12%	12%	12%	12%	12%
Women - with 20 contribution years	statutory retirement age	61Y 6M	65	65	65	65	65
	earliest retirement age	:	:	:	:	:	:
	penalty in case of earliest retirement age	/	/	/	/	/	/
	bonus in case of late retirement	/	/	/	/	/	/
Women - with 40 contribution years	statutory retirement age	58	60	60	60	60	60
	earliest retirement age	:	:	:	:	:	:
	penalty in case of earliest retirement age	18% (early pension)	18%	18%	18%	18%	18%
	bonus in case of late retirement	12% (old age pension)	12%	12%	12%	12%	12%

Data source: ZPIZ-2

- Pensions are indexed to 60% of the increase in the average gross salary and to 40% of the average increase in the cost of living. The pension indexation should not fall below half of the increase in the cost of living.
- The ratio of average old-age pension comparing to net wage is decreasing from the year of the first reform in 2000 (75.3 %) up to the year 2013[7](61.8%) as a result of different changes in the pension indexation and different valuation of the insurance period.
- In the year 2013 the decrease was noticed also due to the various austerity measures[8]. Introduction of consultative personal register of compulsory insurance ensures additional transparency in the entire pension scheme and thus increase confidence in the system (individual recorded paid contribution).
- The total contributionn rate for pension and disability insurance is 24.35% of gross wage without ceiling. The employee´s contribution rate is 15.50% and the employer´s contribution rate is 8.85%.
- The reform resulted in the lower increase of the pensions' expenditure paid by ZPIZ and state budget. The same trend is expected for following four years. By the 2013 reform the estimated transfer from the state budget is planned lower than transfer from the previous years and will be captured by around 3% of GDP.

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[7] If the new reform in 2012 had not been adopted, the average pension would be on long term further decreased. In 2024 when the transitional periods would finish (from previous reform) the average pension would amount only 53% of the average last paid wage before the retirement it would be further decreased in the next years.
[8] Indexation is frozen set until the end of 2015 and foreseen to 2018 (austerity measures).

Occupational pension scheme

The law in 2012 introduces a new approach to the occupational pension scheme. The occupational pension scheme was based on predefined contribution already before the reform and is now adapted to all insured persons. The scheme is actually compulsory supplement pension insurance that has to be paid by the employers. The insured individual will get occupational pension for the period of exit from the labor market until the fulfilment of the conditions for old age retirement. The amount of the pension depends on the amount of raised resources on the individual account and foreseen duration of receiving the occupational pension. However the pension could not be lower than the old age pension that the individual would receive with the same contribution period. The recipient of the occupational pension could enter also voluntary the compulsory system until the old age retirement, for higher accrual rate under the mandatory (compulsory) pension system.

Voluntary supplementary pension – second pillar

The second pillar is voluntary with the minimum retirement age and contributory years defined as in retirement conditions in first pillar. This form of insurance may be established as collective insurance with an employer, who partially or completely funds the insurance for all his employees, or by entering an individual insurance retirement plan under which every member pays his/her own premium. A payer of the supplementary insurance premium is entitled to tax relief for the premiums paid. The two rights ensured by this form of insurance are as follows: the right to supplementary old-age pension and the right to early supplementary old-age pension. The insured person may also (under certain conditions) demand the withdrawal of all the funds on his/her personal account in one payment. In comparison with the previous legislation, there are fundamental changes adopted in the field of investment policy. With regard to umbrella funds or a group of covering funds, an investment policy of a life cycle is to be implemented, which would enable the manager to allocate the member (in accordance with the member's age) from a (sub)fund with a more aggressive investment policy to a fund with a less aggressive investment policy and finally to a fund with a minimum guaranteed return.

In the future for the insurance of adequate level of pensions, the participation in supplementary pensions should be increase. The reform in 2012 has foreseen that the pension plans according to the previous law are adapted until 2015. In the years 2013 and 2014 only three new pension plans were adopted. In this view the effects of the changes in the legislation are not seen yet. In 2013 (around 0.5 mio persons) the negative trend in the decreasing of the number of insured persons continued from the year 2011 (around 0.53 mio persons). That is partly a consequence of the possibility of the pre reform law to withdraw the whole amount of funds after 10 contribution years. The payment of rights under the new law is provided in more detail, and the right to withdraw of the funds (raised through collective supplementary pension insurance) at once is limited only to persons who have less than 5,000 EUR on their account at the time of retirement. The share of persons in supplementary pensions from total number of persons in the compulsory system is also decreasing and was slightly below 60% of insured under mandatory pension insurance in 2013. The amount of resources in the supplementary funds dropped in recent years slightly below 1.8 billion EUR. The current average premium paid into supplementary pension insurance must be raised, as with €35 it will not suffice to cover the loss of income from the compulsory pension and disability insurance caused by the demographic trend[9].

Moreover, more effective control of the system and the insurance of members' rights will be implemented. The Act clearly defines the competences of individual supervisory bodies, as well as criminal provisions in the event that the provisions of the Act are violated. A committee will be formed for each pension fund, an independent body whose task will be to monitor the activities of the pension fund and to supervise the manager of the pension fund.

Non-earning related pensions

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[9] See more in: Učinki pokojninske reforme in nadaljnji koraki, MOLFSA, April, 2014

National means tested pension rights used to be "state pensions" (for Slovenian residents, who were not entitled to pensions) and "supplementary allowance" (for lower pensioners). Both rights have been entirely redefined and moved from the former pension legislation (ZPIZ-1) to our national social assistance legislation (from 2012).

Supplementary allowance is a form of social security transfer, granted to people whose pension is below the prescribed minimum monthly means for living. This allowance was abolished in 2012 and pensioners now can apply for a social assistance. As such they do not represent pension-related expenses and are excluded from the projections. In 2013 there were 11,384 recipients of supplementary allowance (around 16 mio EUR).[10]

1.2 Recent reforms of the pension system included in the projections

The changes of the reform are incorporated in the projections. In May 2013 Slovenia presented the new reform and in accordance with it new projections on the AWG meeting. There were no new provisions since then.

1.3 Description of the actual "constant policy" assumptions used in the projection

All relevant pension schemes are included in the model, i.e. old age pension, disability pension and survivor pension. The country pension model explicitly projects social security earning related pensions and related public pension expenditures (farmers' and military pensions included despite the fact that their contributions have a favourable actuarial treatment).

The model includes assumption of "frozen" indexation of pensions until 2018 as a measure of public finance consolidation.

2 Overview of the Demographic and labour forces projections

2.1 Demographic development

According to new Eurostat population projections, the population is going to rise slowly until 2024 due to more births and more people in old-age and then fall again to the present level until mid 50's. Until 2060 the age structure is going to change substantially. While the share of the youngest cohort will remain unchanged, the share of older people will rise, there will be 70.8 % more people in old-age in 2060 compared to 2013 and 19.1 % less people in the active age (15-64 years old). The increase in the number of older is due to the larger generations born after the 2nd World War till 1980 and increased life expectancy. The old age dependency ratio will therefore more than double.

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[10] In the future development of the models for projections we are examining the possibility to include part of this assistance (or other assistance for elderly) related directly to pensioners in the projections.

Table 4 – Main demographic variables evolution

	2013	2020	2030	2040	2050	2060	Peak year*
Population (thousand)	2060	2088	2087	2078	2069	2040	2024
Population growth rate	0,1	0,1	-0,1	0,0	-0,1	-0,2	2015
Old-age dependency ratio (pop65/pop15-64)	25,4	32,2	41,0	47,7	54,1	52,5	2054
Ageing of the aged (pop80+/pop65+)	26,5	26,7	27,3	34,6	37,2	42,3	2060
Men - Life expectancy at birth	77,2	78,4	80,0	81,5	83,0	84,3	2060
Men - Life expectancy at 65	17,1	17,9	19,0	20,0	21,1	22,0	2060
Women - Life expectancy at birth	83,1	84,1	85,4	86,7	87,8	88,9	2060
Women - Life expectancy at 65	20,9	21,6	22,7	23,6	24,6	25,5	2060
Men - Survivor rate at 65+	83,6	85,4	87,6	89,5	91,1	92,5	2060
Men - Survivor rate at 80+	51,6	55,7	61,3	66,3	70,8	74,8	2060
Women - Survivor rate at 65+	91,9	92,7	93,8	94,7	95,5	96,1	2060
Women - Survivor rate at 80+	72,2	75,0	78,5	81,6	84,3	86,6	2060
Net migration	0,8	4,1	4,6	5,5	5,4	4,5	2045
Net migration over population change	0,3	1,6	-4,1	-14,1	-2,9	-1,3	2024

Source: **EUROSTAT and Commission Services**

Graph 1: Age pyramid comparison: 2013 vs 2060; Population by age groups and sex as a share of total population
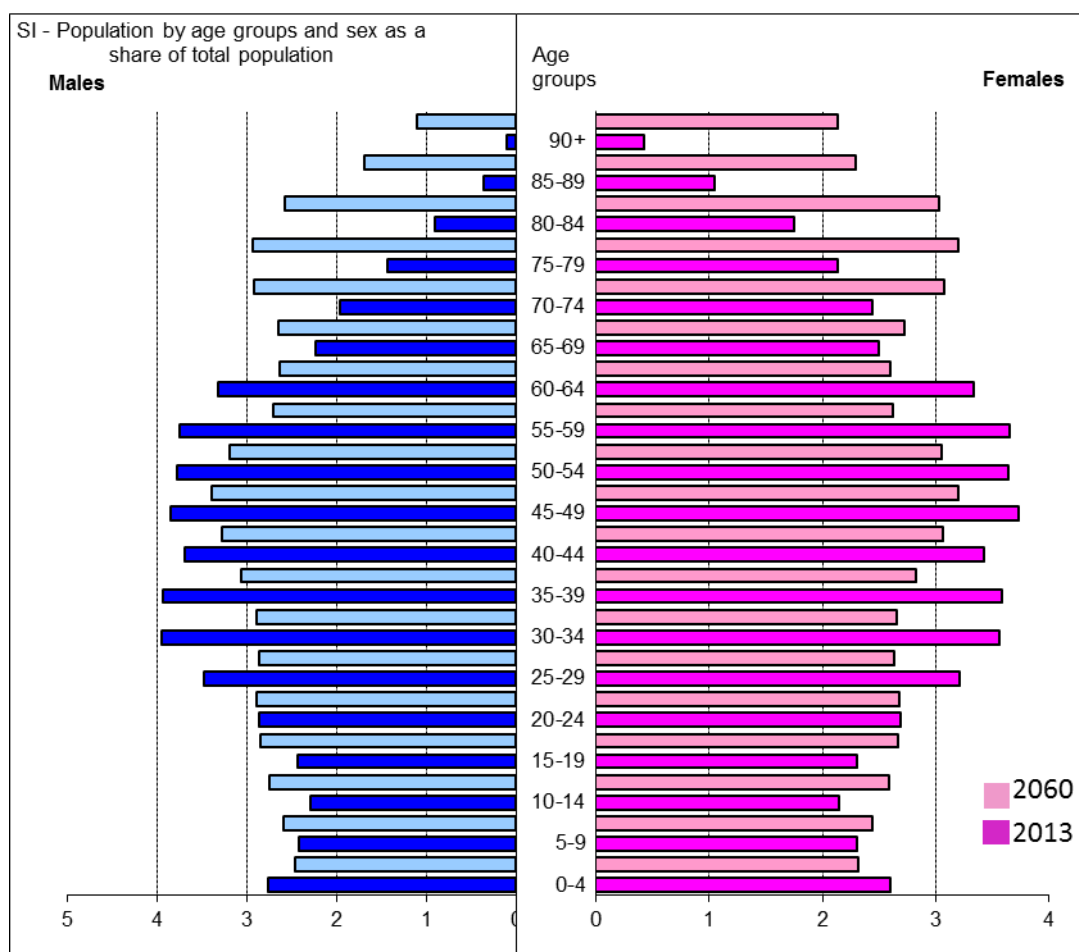
Source: **EUROSTAT and Commission Services**

The main changes in the demographic projections are related to the lower share of people aged 65+ in EUROPOP 2013. In comparison with EUROPOP 2010 the share of older people is higher until year 2045 and afterwards lower due to: (i) higher life expectancy (2060: +0.3 p.p.), (ii) higher fertility rate (2060: -1 p.p.), (iii) lower net migration and therefore less older people in the end of the time horizon (2060: -1.3 p.p.). Especially the last factor is the most important for the development of the population and the difference between the two projections. The changes in the projections have significant influence on the projections of pension expenditures.

Graph 2: Comparison of the demographic trends; EUROPO2010 and EUROPOP2013: Comparison of the share of the 65 years old in the total population (in %)
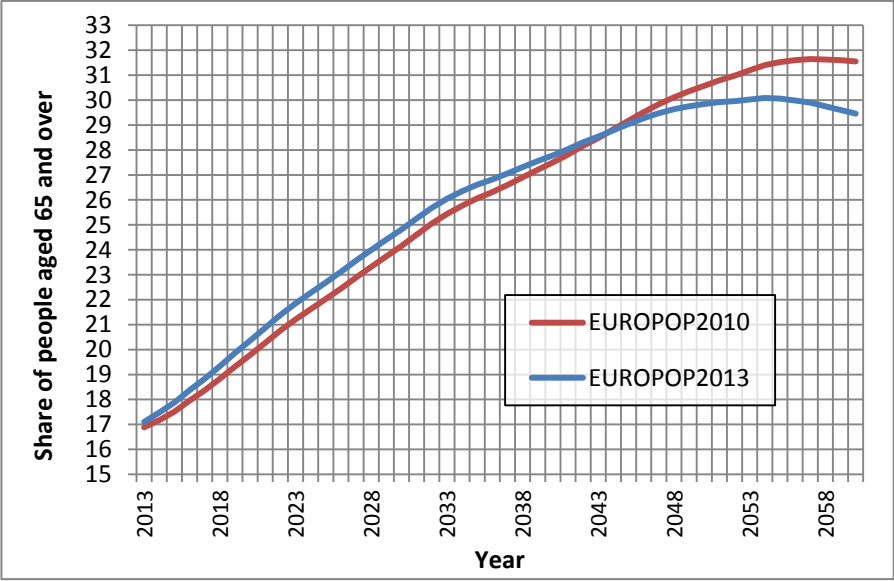
Data source: **EUROSTAT**

Graph 3: Comparison of the demographic trends; EUROPO2010 and EUROPOP2013: Comparison of the assumptions about the net migration
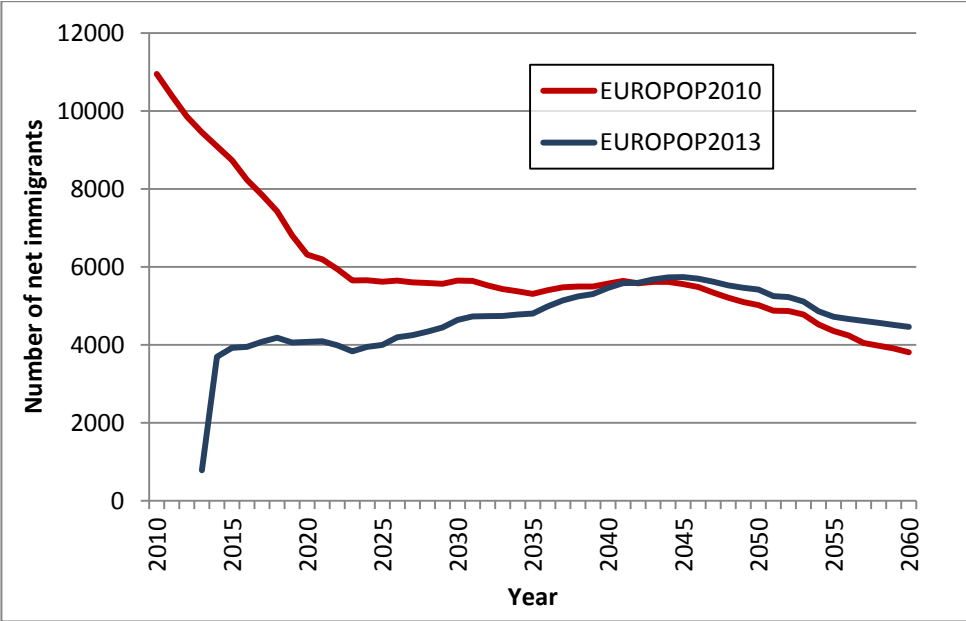
Data source: **EUROSTAT**

2.2   Labour forces projections

Table 5 summarises the developments of participation and employment rates of elderly workers in the period 2013-2060. The main features are very low participation and employment rates for elderly, particularly at the beginning of the observed period and with the peak of the movements in the middle of the period. Participation and employment rates for the age group 55-64 are in 2013 35.6% and 33.1% with estimated steep rise until 2030 when they will reach 64.7% and 62%. However the rates will still be lower compared to other countries. Participation rates and employment rates for the age group 66-74 are particularly low and are also slightly decreasing from the peak years to the end of observed period.

Table 5 – Participation rate, employment rate and share of workers for the age groups 55-64 and 65-74

	2013	2020	2030	2040	2050	2060	Peak year*
Labour force participation rate 55-64	35,6	55,5	64,7	63,6	62,4	63,4	2034
Employment rate for workers aged 55-64	33,1	52,2	62,0	61,2	60,0	61,0	2034
Share of workers aged 55-64 on the total labour force	93,0	94,0	95,8	96,2	96,2	96,1	2045
Labour force participation rate 65-74	7,2	6,8	14,0	15,6	15,3	14,8	2044
Employment rate for workers aged 65-74	7,2	6,8	14,0	15,6	15,3	14,8	2044
Share of workers aged 65-74 on the total labour force	100,0	100,0	100,0	100,0	100,0	100,0	2013
Median age of the labour force	39,0	41,0	43,0	42,0	40,0	41,0	2024

Source: **Commission Services**
* This column represents a peak year, i.e. the year in which the particular variable reaches its maximum over the projection period 2013 to 2060).

Tables 6a and 6b show the dynamic of the careers lengths and duration of retirement for men and women. The average effective age of retirement increases by 1.6 years for men and 3.7 years women.

TABLE 6a Labour market entry age, exit age and expected duration of life spent at retirement – MEN

	2014	2020	2030	2040	2050	2060	Peak year*
Average effective entry age (CSM) (I)	22,6	22,9	22,9	22,9	22,9	22,9	2013
Average effective exit age (CSM) (II)	62,5	64,1	64,1	64,1	64,1	64,1	2013
Average effective working career (CSM) (II)- (I)	39,9	41,2	41,2	41,2	41,2	41,2	2013
Contributory period	38,2	38,7	38,6	38,6	38,5	38,6	2018
Contributory period/Average working career	95,9	93,8	93,7	93,7	93,3	93,5	2014
Duration of retirement **	18,7	18,7	19,8	20,9	21,9	22,9	2060
Duration of retirement/average working career	46,9	45,4	48,0	50,7	53,1	55,6	2060
Percentage of adult life spent at retirement***	29,6	28,8	30,0	31,2	32,2	33,2	2060
Early/late exit****	5,2	2,1	1,1	1,1	0,9	0,9	2013

Source: **Commission Services**

The contributory period for men and women will increase by 1.5 years for women and 0.0 years for men up to 2020 and remain stable for the remaining projected period.

The duration of retirement is increasing for both sexes, for women by 1.1 years and for men by 4.2 years. The higher increase for men is due to the higher growth of life expectancy and lower increase in age at retirement during the projection period. This is also the result of increase in ratio of the duration of retirement to the average working career for men. After 2020 the ratio of the duration of retirement to the average working career for women is increasing, what is the natural consequence of the equalisation of the pension conditions with men (higher age and higher contribution period).

The main reason for the relatively big difference in numbers between the year 2014 and the rest of the period is the new pension reform, which will fully take place in 2020, when pension conditions for men and women are equalised and conditions for the purchasing additional years restricted.

TABLE 6b Labour market entry age, exit age and expected duration of life spent at retirement - WOMEN

	2014	2020	2030	2040	2050	2060	Peak year*
Average effective entry age (CSM) (I)	23,4	23,5	23,5	23,5	23,5	23,5	2019
Average effective exit age (CSM) (II)	60,0	63,6	63,6	63,6	63,6	63,6	2041
Average effective working career (CSM) (II)- (I)	36,6	40,1	40,1	40,1	40,1	40,1	2020
Contributory period	36,4	37,9	37,8	37,8	37,5	37,6	2020
Contributory period/Average working career	99,6	94,6	94,2	84,2	93,5	93,8	2014
Duration of retirement **	25,3	22,5	23,5	24,5	25,5	26,4	2060
Duration of retirement/average working career	69,1	56,1	58,6	61,1	63,6	65,8	2014
Percentage of adult life spent at retirement***	37,6	33,0	34,0	34,9	35,8	36,6	2014
Early/late exit****	2,1	2,5	1,3	1,0	0,9	0,9	2015

Source: **Commission Services**

3 Pension projection results

3.1 Coverage

All relevant pensions are included in the model, including old age pension, disability pension, survival pensions and others. The country pension model explicitly projects social security earning related pensions and related public pension expenditures (farmers' and military pensions included despite the fact that their contributions have a favourable actuarial treatment).

Both Eurostat and AWG public pension expenditure include the same expenditure; the minor difference between the two data sets is explained by the different accounting principles used (cash flow principle in case of AWG data and ESA principle in case of Eurostat data).

TABLE 7 Eurostat (ESSPROS) vs. Ageing Working Group definition of pension expenditure (% GDP)

	2007	2008	2009	2010	2011	2012	2013
1 Eurostat total pension expenditure	9,7	9,6	10,9	11,3	11,4	11,6	
2 Eurostat public pension expenditure	9,7	9,6	10,9	11,3	11,4	11,6	
3 Public pension expenditure (AWG)	9,7	9,9	10,9	11,3	11,4	11,7	12,1
4 Difference (2) - (3)	0	-0,3	0	0	0	-0,1	
5 Expenditure categories not considered in the AWG definition, please specify:	:	:	:	:	:	:	
5.1 ...	:	:	:	:	:	:	
5.2 ...	:	:	:	:	:	:	
5.3 ...	:	:	:	:	:	:	

Source: **Commission Services**

3.2 Overview of projection results

The total gross public expenditure rises from 12.1% of GDP in 2013 to 16.0% in 2053 and slightly decreases to 15.6% in 2060. The main reason for the decrease in expenditure in comparison with AR2012 is the change in population projections – lower migration at the beginning of the projection period and less old people in the later period (the old age dependency ratio in 2060 is going to be 5 points lower than in previous projection, although still very high). In the beginning of the projection period lower share also the result of the frozen pension indexation – expected zero nominal growth of pension. The difference between gross and net pension in Slovenia is insignificant because small percentage of pensions are eligible for personal income tax (in 2014 pensions above 1,095.11 EUR).

TABLE 8 Projected gross and net pension spending and contributions (% of GDP)

Expenditure	2013	2020	2030	2040	2050	2060	Peak year*
Gross public pension expenditure	12,1	11,4	12,6	14,7	16,0	15,6	2053
Private occupational pensions	:	:	:	:	:	:	:
Private individual pensions	:	:	:	:	:	:	:
Mandatory private	:	:	:	:	:	:	:
Non-mandatory private	:	:	:	:	:	:	:
Gross total pension expenditure	12,1	11,4	12,6	14,7	16,0	15,6	2053
Net public pension expenditure	12,0	11,3	12,5	14,6	15,9	15,6	2053
Net total pension expenditure	12,0	11,3	12,5	14,6	15,9	15,6	2053
Contributions	2013	2020	2030	2040	2050	2060	Peak year*
Public pension contributions	9,3	9,5	9,4	9,3	9,2	9,3	2024
Total pension contributions	9,3	9,5	9,4	9,3	9,2	9,3	2024

Source: **Commission Services**

Total public pension spending on old age and early pensions rises from 9.3% of GDP in 2013 to 13.5% in a peak year 2053 and in 2060 reaches 13.2% of GDP. Disability pension expenditures fall due to the fewer number of disabled persons. People are more and more aware of the care for their own health, the safety at work is increasing and at the same time less heavy work jobs are available. Furthermore new legislation provides for stricter eligibility criteria for disability pensions and as a consequence less people can use this "exit" path to (invalidity) retirement. This is reflected in the decreasing number of disabled pensioners also in the long run.

The category of "other pensions" includes military pensions, special rights for farmers, advance pension payments. These groups will gradually disappear from pension system. The recipients of military pensions will gradually die out and there are no new pensions foreseen. The same holds for special rights for farmers.

Between the years 2013 and 2020 pension expenditures fall due to frozen indexation of pensions and pension reform (restricted pension conditions and early retirement etc.) and then rise again when larger generations (born before 1980) fulfil pension conditions. There is also an effect of lower migrations as migrations are projected to be lower than in EUROPOP2010, GDP is going to be lower too. Consequently the ratio of pension expenditure to GDP will increase.

TABLE 9 Projected gross public pension spending by scheme (% of GDP)

Pension scheme	2013	2020	2030	2040	2050	2060	Peak year *
Total public pensions	12,1	11,4	12,6	14,7	16,0	15,6	2053
of which earnings related:							
Old age and early pensions	9,3	9,0	10,3	12,3	13,5	13,2	2053
Disability pensions	1,4	1,2	1,0	0,9	0,9	0,8	2013
Survivors' pensions	1,3	1,2	1,3	1,5	1,6	1,7	2057
Other pensions	0,1	0,0	0,0	0,0	0,0	0,0	2013
of which non-earnings related (including minimum pension and minimum income guarantee):							
Old age and early pensions	:	:	:	:	:	:	:
Disability pensions	:	:	:	:	:	:	:
Other pensions	:	:	:	:	:	:	:
of which							
country-specific scheme 1	:	:	:	:	:	:	:
country-specific scheme 2	:	:	:	:	:	:	:
country-specific scheme 3	:	:	:	:	:	:	:

Source: **Commission Services**

3.3 Description of main driving forces and implications

The main upward driver of pension expenditure remains dependency ratio. The dependency ratio increases from 27.2% in 2013 to 58.1% in 2060. The impact diminished only in the last decade of projections, from 2054 peak of 60.2%.

Through the whole projection period the coverage ratio effect lower the ratio of pension expenditure to GDP. This is a consequence of the increased participation rates. However increasing participations rates do not entirely translate to lower retirement rates. Instead, initial share of "other inactive persons" declines to lower levels (i.e. they become employed) and only then a decline in retirement rates starts.

The benefit ratio is decreasing in the first and slightly in the second decade and remains stable to end of the projection period. This is due to the 2013 reform:

- indexation changed from 100% wage indexation to the indexation combining 60% of growth in wages and 40% of growth in consumer price index,
- expansion of the period for calculating pension base from 18 to 24 most favourable years,
- valorisation of past earnings is linked to the growth of average wage and
- accrual rates are set without further lowering (with the exception of the accrual rates for women in the transitional period from 2013 to 2022).

In the period until 2018 this is the result particularly because of frozen indexation of pensions. The pensioners will have lower pensions because of these austerity measures but new generations of pensioners will be without this effect. The decreased negative influence of the old pensioners will be in a way surpassed with the higher positive effect of the new pensioners who's pension bases are based on growth of wages in the future.

TABLE 10a Factors behind the change in public pension expenditures between 2013 and 2060 using pension data (in percentage points of GDP) - pensions

	2013-20	2020-30	2030-40	2040-50	2050-60	2013-60	Average annual change
Public pensions to GDP	-0,7	1,2	2,1	1,3	-0,4	3,6	0,326
Dependency ratio effect	3,1	3,2	1,9	2,0	-0,3	10,0	0,200
Coverage ratio effect	-0,8	-1,2	-0,2	-0,5	-0,1	-2,8	-0,061
Coverage ratio old-age	*0,4*	*0,0*	*0,1*	*0,0*	*0,0*	*0,6*	*0,012*
Coverage ratio early-age	*-0,9*	*-2,4*	*0,4*	*0,7*	*-1,0*	*-3,2*	*-0,071*
Cohort effect	*-2,1*	*-2,3*	*-1,8*	*-3,7*	*0,0*	*-9,9*	*-0,220*
Benefit ratio effect	-1,8	-0,1	0,3	0,2	0,0	-1,4	-0,030
Labour Market/Labour intensity effect	-0,8	-0,6	0,0	-0,2	0,1	-1,6	-0,033
Employment ratio effect	*-0,8*	*-0,4*	*0,1*	*-0,2*	*-0,1*	*-1,3*	*-0,028*
Labour intensity effect	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,000*
Career shift effect	*0,0*	*-0,3*	*-0,1*	*0,0*	*0,1*	*-0,3*	*-0,006*
Residual	-0,3	-0,2	0,0	0,0	0,0	-0,6	0,402

Source: **Commission Services**
* Sub components of the coverage ratio effect do not add up necessarily.

The positive employment effect on lowering the expenditure is present particularly in the first half of the projection period. The major impact has employment rate effect and career prolongation until 2025 due to the projected higher employment rates, activity rates and decreasing of unemployment rate. This effect is again pronounced after 2040 when the employment rates again reach the values from 2025. The increase in overall employment rate is influenced also by increasing employment of elderly (as a consequence of the pension reform in 2013).

The cohort effect has also effect on lowering expenditures. The number of population aged 50-64 is decreasing in comparison to the number of people aged 65+.

TABLE 10b Factors behind the change in public pension expenditures between 2013 and 2060 using pension data (in percentage points of GDP) - pensioners

	2013-20	2020-30	2030-40	2040-50	2050-60	2013-60	Average annual change
Public pensions to GDP	-0,7	1,2	2,1	1,3	-0,3	3,6	0,326
Dependency ratio effect	3,1	3,2	1,9	2,0	-0,3	10,0	0,200
Coverage ratio effect	-0,8	-1,2	-0,2	-0,5	-0,1	-2,8	-0,061
Coverage ratio old-age	*0,4*	*0,0*	*0,1*	*0,0*	*0,0*	*0,6*	*0,012*
Coverage ratio early-age	*-0,9*	*-2,4*	*0,4*	*0,7*	*-1,0*	*-3,2*	*-0,071*
Cohort effect	*-2,1*	*-2,3*	*-1,8*	*-3,7*	*0,0*	*-9,9*	*-0,220*
Benefit ratio effect	-1,8	-0,1	0,3	0,2	0,0	-1,4	-0,030
Labour Market/Labour intensity effect	-0,8	-0,6	0,0	-0,2	0,1	-1,6	-0,033
Employment ratio effect	*-0,8*	*-0,4*	*0,1*	*-0,2*	*-0,1*	*-1,3*	*-0,028*
Labour intensity effect	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,000*
Career shift effect	*0,0*	*-0,3*	*-0,1*	*0,0*	*0,1*	*-0,3*	*-0,006*
Residual	-0,3	-0,2	0,0	0,0	0,0	-0,6	0,402

The table 11 shows the evolution of replacement rate at retirement and benefit ratios (analysed above). The interpretation of the values depends on the average wage used for calculation. In Slovenia net pension principle is in place as the pension rating base is calculated in net terms. When comparing net and gross pension, there is no significant difference as only small percentage of pensions are eligible for personal income tax. Contributions for health insurance are calculated separately and paid out directly by the Institute for pension and disability insurance and therefore not deducted from the pensions (see also p.11). This is also the main reason why the ratios of the pension (first pension and average pensions) to the gross average wage of the economy and gross average wage at retirement are relatively low. Taking into account what has been explained, it would therefore be better if a comparison between net average wage and pension would be made. Under such calculations (net) Theoretical Replacement Rates for average earner retiring at 65 after 40 years of career would be 57.25% (men) and 60.25% (women).

Both benefit and replacement ratios are falling in the first decade and then stabilise until the end of the period.

The structure of the pension expenditures by age group shows that the average pension amount for oldest age group 75 + is higher than for the younger age old groups after 2020. This is the outcome of increased number of the best consecutive years used for the calculation of the pension base. In the period from 2000 to 2019 the number of years will increase from 10 to 24 years. This will have a negative impact on the level of pension base - this can be seen if we compare average pension base with average gross wage – but decrease would be even larger if we would take into account also the period 2000-2008 in which the number of years increased from best 10 consecutive years to 18 best consecutive years. New generations of pensioners will thus have lower pension bases and thus lower pensions compared to the older generations.

Replacement rate is higher in the beginning of the period and will gradually decreased and is behaving differently compared to the 2013 projections due to the different base year, actual pensionable earning, macroeconomic assumptions (inflation and productivity growth), indexation. In current projection model also covers new old age pensioners and not all new pensioners as in 2013.

TABLE 11 Replacement rate at retirement (RR), benefit ratio (BR) and coverage by pension scheme (in %)

	2013	2020	2030	2040	2050	2060
Public scheme (BR)	33,8	29,0	29,0	29,8	30,1	30,2
Public scheme (RR)	:	:	:	:	:	:
Coverage	100,0	100,0	100,0	100,0	100,0	100,0
Public scheme old-age earnings related (BR)	37,8	32,1	31,7	32,4	32,7	32,9
Public scheme old-age earnings related (RR)	36,1	34,6	34,2	34,2	34,1	34,1
Coverage	69,0	71,4	74,8	77,0	77,6	77,3
Private occupational scheme (BR)	:	:	:	:	:	:
Private occupational scheme (RR)	:	:	:	:	:	:
Coverage	:	:	:	:	:	:
Private individual scheme (BR)	:	:	:	:	:	:
Private individual scheme (RR)	:	:	:	:	:	:
Coverage	:	:	:	:	:	:

Total (BR)	33,8	29,0	29,0	29,8	30,1	30,2
Total (RR)	:	:	:	:	:	:

Source: **Commission Services**

The number of pensioners has been rising more rapidly from 2009 (there were 606,000 pensioners in 2013). In the years to come the number of pensioners will rise further, but at a slower pace. The projection shows, that there will be around 809,000 pensioners in 2060, that is 33.4% more than in 2013. Meanwhile there will be less people employed, due to the decrease of working age population and increase of the elderly population. Old age dependency ratio will more than double.

TABLE 12 System dependency ratio and old-age dependency ratio

	2013	2020	2030	2040	2050	2060
Number of pensioners (thousand) (I)	606,0	685,5	750,2	818,4	841,9	808,8
Employment (thousand) (II)	904,5	920,8	912,5	875,7	834,6	821,7
Pension System Dependency Ratio (SDR) (I)/(II)	67,0	74,4	82,2	93,5	100,9	98,4
Number of people aged 65+ (thousand) (III)	356,2	430,4	522,5	580,1	618,3	599,2
Working age population 15 - 64 (thousand) (IV)	1404,3	1335,8	1273,4	1215,4	1143,7	1140,8
Old-age Dependency Ratio (ODR) (III)/(IV)	25,4	32,2	41,0	47,7	54,1	52,5
System efficiency (SDR/ODR)	2,6	2,3	2,0	2,0	1,9	1,9

Source: **Commission Services**

The numbers in Tables 13a and 13b are obtained by dividing the number of pensions (not pensioners) by the number of inactive people. The detail explanation was given in the country fiche 2013. The numbers are above 100% because i) many pensions are paid to the pensioners abroad and the model does not differentiate between the number of pensioners (Slovenian) and the number of pensions that are paid; ii) pensioners outnumber the inactive also due to the fact that some pensioners are treated as "active" according to Labour force survey.

The ratio of pensioners in the -54 age group is low and falling, showing that very few people in the mentioned age group are retired and showing also that transitional period for working age prolongation is in effect. The levels of pensioners to inactive population are much higher in the older age groups, indicating that a majority of people get retired at the age 60-69. The same holds true for the female pensioners to inactive population.

However, the ratios of age groups 55-59 still rise sharply from 2010 to 2020 before levelling off in the later decades. It is assumed in the model that categories of people who are inactive but not retired (e.g. housewives) will eventually fade away. The same analysis with a focus on female shows similar patterns; no extra variability in the data is observed.

TABLE 13a Pensioners (public scheme) to inactive population ratio by age group (%)

	2013	2020	2030	2040	2050	2060
Age group -54	6,1	5,9	5,7	5,1	4,7	5,1
Age group 55-59	80,1	127,0	125,8	116,7	115,2	116,3
Age group 60-64	109,9	127,9	127,5	126,5	124,7	125,7
Age group 65-69	124,0	124,1	140,6	143,4	142,6	143,0
Age group 70-74	121,9	121,1	126,2	130,4	131,3	131,4
Age group 75+	104,9	111,5	112,3	113,3	113,6	114,1

Source: **Commission Services**

TABLE 13b Pensioners (public schemes) to total population ratio by age group (%)

	2013	2020	2030	2040	2050	2060
Age group -54	2,3	2,3	2,3	2,1	2,0	2,2
Age group 55-59	38,6	34,8	28,1	28,4	28,5	28,6
Age group 60-64	90,6	79,6	61,8	60,9	61,0	61,3
Age group 65-69	113,9	114,2	113,5	113,9	114,2	114,7
Age group 70-74	114,4	114,9	115,8	116,9	117,3	117,8
Age group 75+	104,9	111,5	112,3	113,3	113,6	114,1

Source: **Commission Services**

TABLE 14a Female pensioners (public scheme) to inactive population ratio by age group (%)

	2013	2020	2030	2040	2050	2060
Age group -54	6,1	5,6	5,6	5,0	4,8	5,1
Age group 55-59	86,4	133,0	130,7	117,8	116,8	118,1
Age group 60-64	107,3	128,6	128,7	125,4	123,5	124,6
Age group 65-69	112,7	111,8	128,9	132,6	131,6	132,1
Age group 70-74	110,3	109,1	111,4	116,4	116,8	117,1
Age group 75+	99,8	109,7	110,4	111,5	111,7	112,2

Source: **Commission Services**

TABLE 14b Female pensioners (public scheme) to total population ratio by age group (%)

	2013	2020	2030	2040	2050	2060
Age group -54	2,4	2,4	2,4	2,2	2,1	2,3
Age group 55-59	51,1	43,3	30,0	30,3	30,4	30,5
Age group 60-64	96,0	92,5	63,8	62,2	62,3	62,6
Age group 65-69	105,9	106,1	106,8	106,9	107,2	107,6
Age group 70-74	105,0	105,2	105,9	106,9	107,2	107,6
Age group 75+	99,8	109,7	110,4	111,5	111,7	112,2

Source: **Commission Services**

The baseline year is exceptional, because after an increase in number of new pensioners in years before the reform 2013 (the pre reform effect), the new entrants decreased as the result of the reform. The main impacts of the reform are seen in the first decade of the projection measures. After the end of the transition period the number of new pensioners will increase to around 21,000–22,000 per year. Due to the demographic changes the number of new pensioners will decrease in the last decade.

Pensionable earnings are calculated on the basis of the average contributory periods for men and woman. From the average contributory period we estimated average accrual rate and with the actual data on average pension of new pensioners from Pension fund we calculated pension basis. This gives us different results than in the previous projection. Pensionable earnings are lower than in previous projection also because the value of pensionable earnings is lower at the beginning of the projection period.

The average number of months paid in the first year of retirement is given by Pension fund according actual data. The value of the baseline year is assumed through the whole period for both, men and women, and calculated as weighted average for the total number of new old age pensioners.

TABLE 15a Projected and disaggregated new public pension expenditure (old-age and early earnings-related pensions)

New pension	2013	2020	2030	2040	2050	2060
I Projected new pension expenditure (millions EUR)	82,5	77,0	163,2	246,1	334,5	409,0
II. Average contributory period	37,1	38,4	38,2	38,2	38,0	38,1
III. Monthly average pensionable earnings	1140,5	1309,2	1878,4	2726,5	3953,7	5638,0
IV. Average accrual rates (%)	1,5	1,5	1,5	1,5	1,5	1,5
V. Sustainability/Adjustment factor	:	:	:	:	:	:
VI. Number of new pensioners ('000)	17,5	14,3	21,1	22,0	20,7	17,7
VII Average number of months paid the first year	7,3	7,2	7,3	7,3	7,3	7,3
Monthly average pensionable earnings / Monthly economy-wide average wage	0,66	0,63	0,63	0,63	0,63	0,63

Source: Commission Services

TABLE 15b Disaggregated new public pension expenditure (old-age and early earnings-related pensions) - MEN

New pension	2013	2020	2030	2040	2050	2060
I Projected new pension expenditure (millions EUR)	40,5	43,6	78,8	119,3	163,1	197,9
II. Average contributory period	38,1	38,7	38,6	38,6	38,5	38,6
III. Monthly average pensionable earnings	1189,1	1349,9	1951,3	2826,8	4101,2	5865,1
IV. Average accrual rates (%)	1,4	1,4	1,4	1,4	1,4	1,4
V. Sustainability/Adjustment factor	:	:	:	:	:	:
VI. Number of new pensioners ('000)	9,0	8,5	10,6	11,1	10,5	8,9
VII Average number of months paid the first year	6,9	6,9	6,9	6,9	6,9	6,9
Monthly average pensionable earnings / Monthly economy-wide average wage	0,69	0,65	0,65	0,65	0,65	0,65

Source: Commission Services

TABLE 15c Disaggregated new public pension expenditure (old-age and early earnings-related pensions) - WOMEN

New pension	2013	2020	2030	2040	2050	2060
I Projected new pension expenditure (millions EUR)	42,0	33,3	84,4	126,9	171,5	211,2
II. Average contributory period	36,1	37,9	37,8	37,8	37,5	37,6
III. Monthly average pensionable earnings	1096,8	1256,2	1813,0	2635,5	3819,2	5435,1
IV. Average accrual rates (%)	1,6	1,6	1,5	1,5	1,5	1,5
V. Sustainability/Adjustment factor	:	:	:	:	:	:
VI. Number of new pensioners ('000)	8,5	5,9	10,6	10,9	10,2	8,8
VII Average number of months paid the first year	7,7	7,7	7,7	7,7	7,7	7,7
Monthly average pensionable earnings / Monthly economy-wide average wage	0,63	0,60	0,60	0,61	0,61	0,60

3.4 Financing of the pension system

The employers' and employees' contributions are increasing in line with the growth rate of the economy. The ratio of number of contributors and employment differs because of different source of data. The number of contributors is related to the statistic of formal employees and the employment from the ILO definition.

TABLE 16 Revenue from contribution (Millions), number of contributors in the public scheme (in 1000), total employment (in 1000) and related ratios (%)

	2013	2020	2030	2040	2050	2060
Public contribution	3269,3	4134,1	5865,6	8028,1	11073,6	15663,5
Employer contribution	*1348,8*	*1705,6*	*2419,9*	*3312,1*	*4568,6*	*6462,2*
Employee contribution	*1798,9*	*2274,8*	*3227,5*	*4417,4*	*6093,2*	*8618,7*
State contribution	*121,6*	*153,8*	*218,2*	*298,6*	*411,9*	*582,6*
Number of contributors (I)	833,1	846,1	829,6	792,2	756,0	748,1
Employment (II)	904,5	920,8	912,5	875,7	834,6	821,7
Ratio of (I)/(II)	0,9	0,9	0,9	0,9	0,9	0,9

Source: **Commission Services**

3.5 Sensitivity analysis

Higher life expectancy

- With the assumption of higher life expectancy projected results show higher ratio of pension expenditure to GDP (16.5%) that is caused mostly by higher number of pensioners projected and their longer stay in retirement.

Higher employment and higher employment for elderly

- Higher employment lead to higher number of contributors and consequently to the increase of nominal GDP. The nominal pension expenditures do not decrease, however the ratio of expenditure to GDP decrease to 15.3% from 15.6% in baseline projection. In the projection the number of pensioners stays the same, however the number of inactive decrease, due to the higher employment.
- Higher employment for elderly has the highest impact on the pension expenditure and positive outcomes in the labour market. The 14.8% ratio of expenditure to the GDP is projected, that is the lowest estimated value. This is the result of higher employment of elderly persons and longer working careers (for more than 2.6 years), more contributors and lower number of pensioners particularly in the age group of 60-64 and 65-69 years old.

Higher and lower labour productivity

- Higher labour productivity has impact on higher GDP and wages, but without changes in the number of contributors and number of pensioners. The ratio of expenditure to GDP is lower compared to the baseline (15.4%) because indexation of pensions amounts to 60% of the growth of wages. Thus, the remaining 40% of the increase in productivity increases GDP (and wages) but not pensions of existing pensioners, therefore improving the sustainability of the

pensions system. On the contrary, low productivity means lower contributions and wages as well as GDP, and the ratio is higher than in the baseline scenario (15.8%).

Lower migration

- Lower migration first decreases the number of employees and therefore the GDP. Eventually, when the immigrants start to retire, the number of pensioners is lower as well (compared to the baseline scenario), which elevates the pressure on the pension system. However, the pension expenditure-to-GDP ratio is still higher than in the baseline scenario (16.%).

Risk scenario

- In the risk scenario projection results show impact of the lower TFP. The impact to GDP is somewhat stronger than by lower labour productivity scenario.

Linking retirement age to increases in life expectancy

- In the dynamic retirement age scenario the number of pensioners, particular in age group 55-59 and 60-64 years old decrease and contribution period is longer. This result in 15,2% ratio of expenditures to GDP.

TABLE 17 Public and total pension expenditure under different scenarios (p.p. deviation from the baseline)

	2013	2020	2030	2040	2050	2060
Public Pension Expenditure						
Baseline	12,1	11,4	12,6	14,7	16,0	15,6
Higher life expectancy (2 extra years)	0,0	0,0	0,2	0,4	0,7	0,9
Higher lab. productivity (+0.25 pp.)	0,0	0,0	-0,1	-0,2	-0,2	-0,2
Lower lab. productivity (-0.25 pp.)	0,0	0,0	0,1	0,2	0,2	0,2
Higher emp. rate (+2 pp.)	0,0	-0,1	-0,3	-0,3	-0,4	-0,4
Higher emp. of older workers (+10 pp.)	0,0	-0,5	-1,4	-1,4	-1,2	-0,9
Lower migration (-20%)	0,0	0,0	0,1	0,3	0,5	0,6
Risk scenario	0,0	0,0	0,1	0,2	0,3	0,3
Policy scenario: linking retirement age to increases in life expectancy	0,0	0,0	0,0	-0,1	-0,3	-0,5
Total Pension Expenditure						
Baseline	12,1	11,4	12,6	14,7	16,0	15,6
Higher life expectancy (2 extra years)	0,0	0,0	0,2	0,4	0,7	0,9
Higher lab. productivity (+0.25 pp.)	0,0	0,0	-0,1	-0,2	-0,2	-0,2
Lower lab. productivity (-0.25 pp.)	0,0	0,0	0,1	0,2	0,2	0,2
Higher emp. rate (+2 pp.)	0,0	-0,1	-0,3	-0,3	-0,4	-0,4
Higher emp. of older workers (+10 pp.)	0,0	-0,5	-1,4	-1,4	-1,2	-0,9
Lower migration (-20%)	0,0	0,0	0,1	0,3	0,5	0,6
Risk scenario	0,0	0,0	0,1	0,2	0,3	0,3
Policy scenario: linking retirement age to increases in life expectancy	0,0	0,0	0,0	-0,1	-0,3	-0,5

Source: **Commission Services**

3.6 Comparison with previous projections

Table 18 compares the rise in the public pension to GDP ratio in this round of projections to previous one. The ratio of public pension expenditure to GDP of the current round of projections in 2060 is 1.4 p.p. lower than in the projections 2013. The impact on total change in comparison to the previous projection is higher negative employment effect (higher activity rates) and lower dependency ratio effect.

TABLE 18 Overall change in public pension expenditure to GDP under the 2006, 2009, 2012 (2013) and 2015 projection exercises

	Public pensions to GDP	Dependency ratio	Coverage ratio	Employment effect	Benefit ratio	Labour intensity	Residual (incl. Interaction effect)
2006 *	7,28	13,26	-3,59	-0,97	-0,87	:	-0,55
2009 **	8,77	13,72	-3,48	-0,14	-0,67	:	-0,66
2012 (2013)***	5,85	12,29	-2,97	-0,96	-1,62	0,01	-0,90
2015****	3,58	9,96	-2,81	-1,32	-1,39	0,00	-0,87
* 2004-2050; ** 2007-2060; *** 2010-2060; **** 2013-2060							

Source: Commission Services

The reform's positive effects were already included in projections 2013. The additional decrease of the ratio is caused by the new demographic projections (EUROPOP2013) (changes in assumptions) and frozen indexation in the first years of the projected period (the policy related changes). Other factors are also related to the high ratio in basic year (it was 12.1%[11]).

TABLE 19 Decomposition of the difference between 2013 and the new public pension projection (% of GDP)

	2013	2020	2030	2040	2050	2060
Country fiche 2013	11,4	11,7	12,7	14,8	16,7	17,0
Change in assumptions	1,0	1,1	0,5	0,3	-0,6	-1,4
Improvement in the coverage or in the modelling	0,0	0,0	0,0	0,0	0,0	0,0
Change in the interpretation of constant policy	0,0	0,0	0,0	0,0	0,0	0,0
Policy related changes	-0,3	-1,4	-0,8	-0,4	-0,1	0,0
New projection	12,1	11,4	12,4	14,7	16,0	15,6

Source: Commission Services

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[11] The pensions to GDP ratio was in the basic year for the 2009 projection 10.1% and 11.2% in 2012.

4 Description of the model

The projections were made with the same model and methodology as the previous exercise[12]. Model used for the projections has been technically derived from the "generational accounting" model, however the focus has been changed from cohort perspective to calendar years. Age profiles are combined with population projections and projections of employment rates. The impacts of expected future changes (like parameters of the pension reforms) are entering through the set of matrices, whereby we follow each cohort of pensioners separately since some matrices differ for each cohort of pensioners. Some matrices are derived by the microsimulation pension model that we run in parallel. Because it predominantly rests on the age profiles from the base year, we refer to the model as an "age-profiles-based model".

4.1 Data used to run the model

In the calculations many different data sources have been used, so we will just point out those most extensively used. At the aggregate level the key data source is Statistical office of the Republic of Slovenia, especially their system of national accounts (European system of accounts – ESA). They provided also data at the micro level (Consumer Expenditure Survey and the data assembled for the "Microsimulation Model of the Taxes and Transfers") which have been used for creating age profiles. For the pension part the key institutions is the Institute of Pension and Disability Insurance of Slovenia (ZPIZ). Their annual and monthly reports have been used as the source of aggregate data, but they provided also numerous age profiles based on the data with complete coverage. The obtained results are in synthetic form entering the age-profiles-based model. Another important source was Ministry of finance with detailed aggregate data about categories of public revenues and expenditures.

The macroeconomic assumptions and demographic and labour market projections are from European Commission and used as exogenous variables in the model.

4.2 General description of the model

Technically, the age-profiles-based model builds on age profiles matrix, population matrix and a coefficient matrix. The age profiles matrix includes average values of projected categories (contributions, pensions etc.) by age. It builds on the situation from the base year. The key assumption of the model is that next generations "inherit" the situation of the previous ones in the base year, on which the further matrices (of legally enforced changes etc.) are applied. The population matrix for the 2015 projections is based on the Eurostat population projections EUROPOP2013, and included in the set of assumptions, submitted by the European Commission.

The coefficient matrix (C) summarizes the effects of future departures from the basic age profile, assumed in the matrix of age profiles. Data for coefficient matrices have also been obtained from various simulations on micro data. For instance, for simulating the effects of the PDIA-1999 on pension expenditures we have taken individual data about pension years, age, pensions at the time of retirement etc. about individuals that are already retired. We have simulated their retirement age and their pensions under the new conditions. Weighted averages by age groups enter the coefficient matrix.

Technically, the matrices have age (a) in their rows and calendar years (t) in their columns. The matrix of pension profiles ($PROF$) has the pension levels in its cells; the population matrix (P) has the number of people in its cells; and the coefficients matrix (C) contains the coefficients of adjustments.

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[12] The projections are made by the Faculty of Economics in Ljubljana in relation to the government's working group for the preparation of projections of the population ageing effects activities.

Pensions paid to individuals aged k in year t are thus calculated as (matrices are multiplied in an element-by-element manner):

$$PENS_{a,t} = PROF_{a,t} P_{a,t} C_{a,t} G_t \qquad (1)$$

where G contains coefficients of the cumulative growth of wages from the base year to time t. According to the Slovenian pension legislation the growth of pension is indexed 60% to wages and 40 to CPI in addition until 2018 the indexation is frozen. Pension expenditures in year t are calculated as the sum of projected pension expenditures by all age groups:

$$PENS_t = \sum_{a=0}^{D} PENS_{a,t} \qquad (2)$$

where index a runs from 0 to D; with D denoting the maximum length of life (in our model it is the age group 100+).

This pension module is linked to the macroeconomic assumptions provided by the European Commission.
In the model demographic changes thus affect public pension expenditures expressed as a share of GDP through the pension expenditures and through GDP, since GDP depends on the labour input, which is influenced by the demographic development. Labour productivity growth enters into the calculations exogenously.

The Model covers all kinds of public pensions since they are all contained in the pension age profiles from the base year.

The IMAD's sub-model for simulating retirement process (depending on the set of employment and unemployment rates, provided by the European Commission) has been used and incorporated into the age-profiles-based model.

4.3 Additional features of the projection model

The persons are not presented and analysed individually, i.e. each individual is not modelled separately. The units of analysis are cohorts.

Due to the limitation of the model, we used also a dynamic microsimulation pension model (with static ageing procedure) in order to be able to estimate the movement of the number of average contributory period and average accrual rates for the new old-age pensioners during the observation period 2013-2060.

Survivor's pensions are modelled together with other pensions – being a part of all pensions.

The retirement age is not explicitly modelled. The sub-model of the *Institute of the Macroeconomic Analysis and Development* is used to link employment rates with the retirement rates.

ANNEX 1

TABLE A1 Factors behind the change in public pension expenditures between 2013 and 2060 using pension data (in percentage points of GDP) - pensions

	2013-20	2020-30	2030-40	2040-50	2050-60	2013-60
Public pensions to GDP	-0,7	1,2	2,1	1,3	-0,4	3,6
Dependency ratio effect	3,3	4,6	3,1	3,1	-0,5	13,6
Coverage ratio effect	-0,8	-1,1	-0,2	-0,3	-0,1	-2,5
*Coverage ratio old-age**	*0,4*	*0,0*	*0,1*	*0,0*	*0,0*	*0,6*
*Coverage ratio early-age**	*-1,0*	*-2,2*	*0,2*	*0,5*	*-0,6*	*-3,1*
*Cohort effect**	*-2,1*	*-1,9*	*-1,1*	*-1,6*	*0,0*	*-6,7*
Benefit ratio effect	-1,8	-0,1	0,3	0,1	0,0	-1,5
Labour Market/Labour intensity effect	-0,8	-0,6	0,0	-0,2	0,0	-1,5
Employment ratio effect	*-0,8*	*-0,4*	*0,1*	*-0,1*	*-0,1*	*-1,3*
Labour intensity effect	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*	*0,0*
Career shift effect	*0,0*	*-0,3*	*-0,1*	*0,0*	*0,1*	*-0,3*
Residual	-0,6	-1,7	-1,1	-1,4	0,1	-4,6

*Source***: Commission Services**

TABLE A2 Factors behind the change in public pension expenditures between 2013 and 2060 using pensioners data (in percentage points of GDP) - pensioners

	2013-20	2020-30	2030-40	2040-50	2050-60	2013-60
Public pensions to GDP	-0,7	1,2	2,1	1,3	-0,4	3,6
Dependency ratio effect	3,3	4,6	3,1	3,1	-0,5	13,6
Coverage ratio effect	-0,8	-1,1	-0,2	-0,3	-0,1	-2,5
Coverage ratio old-age*	0,4	0,0	0,1	0,0	0,0	0,6
Coverage ratio early-age*	-1,0	-2,2	0,2	0,5	-0,6	-3,1
Cohort effect*	-2,1	-1,9	-1,1	-1,6	0,0	-6,7
Benefit ratio effect	-1,8	-0,1	0,3	0,1	0,0	-1,5
Labour Market/Labour intensity effect	-0,8	-0,6	0,0	-0,2	0,0	-1,5
Employment ratio effect	-0,8	-0,4	0,1	-0,1	-0,1	-1,3
Labour intensity effect	0,0	0,0	0,0	0,0	0,0	0,0
Career shift effect	0,0	-0,3	-0,1	0,0	0,1	-0,3
Residual	-0,6	-1,7	-1,1	-1,4	0,1	-4,6

*Source***: Commission Services**