

ADJUSTMENT OF THE PENSION SYSTEM IN SLOVAKIA

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Abstract

This article is dedicated to pension reform in Slovakia. We focus on the issue of allocation of funds in PAYG and savings pillars. In this article we try to quantify the impact of such decisions, based on the current state, which takes in Slovakia. Required parameters are estimated through the time series to estimate future retirement benefits.

Key words: Pension Insurance. PYAG Pillar. Pension Reform

JEL Code: J26, G22

Introduction

Creating retirement savings is currently very topical issue. Slovakia introduced an obligation for newly-employed population to register in the second pension pillar in the past. In this article we highlight the advantages of this step as well as the impact of any actions in the field of the proportion of contributions paid between the Social Insurance Agency in Slovakia and the second pension pillar. We are also trying to quantify the costs of Social Insurance Agency for individual pensions covered by pension insurance.

1 Pension scheme

In this contribution, we drew on the Act no. 461/2003 Z. z. on Social Insurance as amended. (Elektronická Zbierka zákonov, 2003) Under this Act, we defined individual requirements for the calculation of pensions in the examples. We also defined the list of pensions covered by income from pension insurance.

When analyzing the results we built upon the knowledge of the actuarial and financial mathematics as displayed in publications (Bobáková, 2006; Vlachynský a kol., 2006; Cipra, 2006). Statistical data and data on the number and development of demographic indicators for the Slovak Republic were drawn from documents available from Statistical Office of the Slovak Republic (Infostat, 2005, 2006a, 2006b).

2 Input conditions and parameters

As we stated in previous chapter, for the calculation of future earnings, value of the current wages of insured, or its ratio to the average wage in the national economy in a given year, is very important. In order to accomplish the conversion and standardize the procedure in time, we abstract from the ongoing changes in the employee's salary and assume that the wage is changed only when changing the average wage, i.e. workers wage is given throughout the year for which is that average wage calculated. Since it is generally accepted that a higher wage results in a higher pension, such a scenario is avoided and therefore we will not consider the impact of uneven growth of wage to average wage, but we assume that the proportion of the amount of the employee's salary to the average wage is constant throughout his work life. Because our goal is not to analyze the impact of employment time on the amount of employee's wage, this input condition can be accepted.

To calculate the income from the first pension pillar it is required to regularly establish the current pension value (ADH) by the State (Social Insurance Agency) every year - Tab. 1.

Tab. 1 Current pension value

Calendar Year	Current Pension Value	ADH (Eur)
2004	183,58	6,0937
2005	195,31	6,4831
2006	214,68	7,1261
2007	232,51	7,7179
2008	249,14	8,2699
2009	8,9955	8,9955
2010	9,2246	9,2246
2011	9,5756	9,5756

Source: Sociálna poisťovňa, 2011a

Since in our calculations we will deal with receipt of pensions in the future, we need to predict this value. We used a simple regression model of time series for prediction, which can be written as:

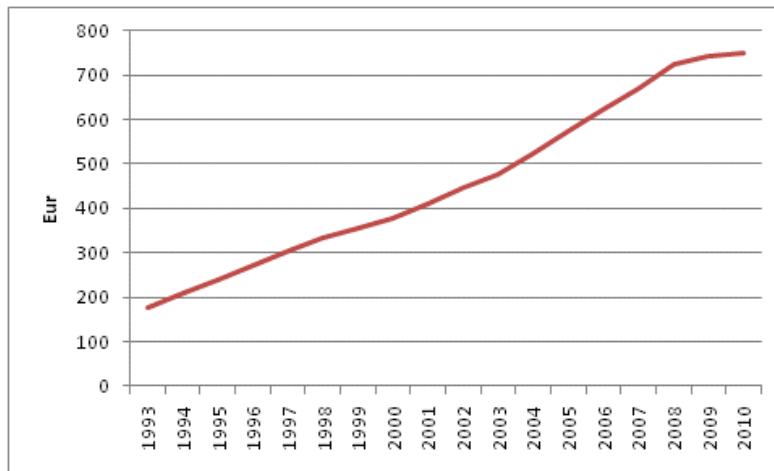
$$y = -1049,37 + 0,526679 \cdot t \quad (1)$$

On this basis we made an estimate of the value of ADH in the future. The variable t represents the year, which is typed in accordance with our booking calendar, for example

2011 etc. This model was tested as statistically significant, not only through a test of statistical significance of the model, but also regression coefficients.

Another important variable in determining the amount of income is the average wage. We present its amount in the figure below (Fig. 1)

Fig. 1 Evolution of the average wage in Slovakia



Source: Štatistický úrad, 2010

Also, to estimate the average wage, we used a simple regression model of time series in which we tested the statistical significance of the model and the regression coefficients. Tests of the model and the regression coefficients come out as statistically significant and therefore regression model can be written as:

$$y = -70036,9 + 35,22018 \cdot t \quad (2)$$

On this basis we made an estimate of the value of the average wage in the future. The variable t represents the year, which is typed in accordance with our booking calendar, for example 2011 etc.

3 Comparison of the amount of pension and wages

To see the yield of first pension pillar we will show the proportion the pension obtained from the Social Insurance Agency against the monthly salary received by the employee during his working life. Again, we consider that since 1994 (year since employee wage point has been monitored) the employee received the amount of wages still constant in proportion to the amount the average wage, thus the amount of his wages was given all the time through rate to the average wage.

Thus, we calculated the following values of pension rate against the employee's wage, which is shown in the following table (Table 2)

Tab. 2 The proportion of the pension amount and wage of an employee

Calendar year	Pension/Wage
2004	0,464
2005	0,452
2006	0,458
2007	0,462
2008	0,458
2009	0,484
2010	0,492
2011	0,484

Source: original research

4 Effect of changes in the share of contributions to various pillars

In the next section, consider the case of an employee, who got employed in 2005 (since 1.1.2005). The amount of his monthly wage is equal to the average wage declared for the calendar year. Moreover, we consider no concessions because of reduced health status. Over the next 40 years was continuously employed without interruption, or change in employment has been a smooth transition from one employer to another, the amount of wage vary only as we stated at the beginning of Chapter 2. Given that an employee will be retiring in 2045, we expect that in that time the limit of the retirement will be forwarded to the level of 65 years.

We assume that the remuneration of the deposits made into the second pension pillar does not change in time and is at 5% p.a. Furthermore, we assume that the employee began work aged 25 years, until that time had never been covered by pension insurance. We assume that the average life expectancy for men is 75 years.

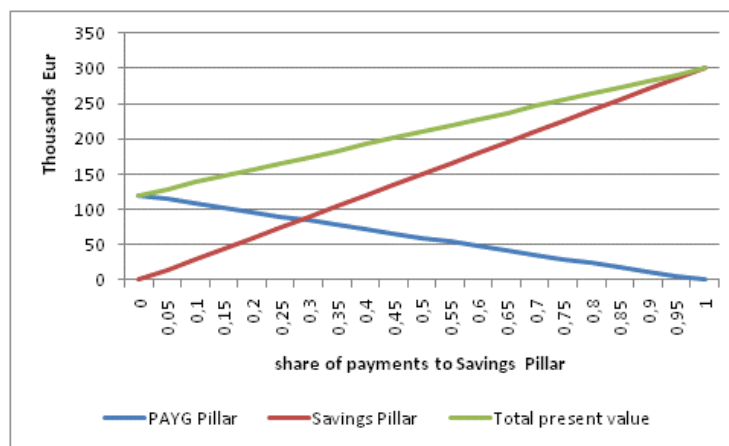
We consider the use of Slovak model, in which the total amount of charges collected as pension is equal to 18% from the amount of gross wage, partly paid by the employee and partly by the employer. We do not consider impacts to burden one or the other part and are working with the total amount, irrespective of which of the parties was provided. We also used the distribution of payments between the first and second pillar at the 50: 50rate, i.e. 9%: 9%. To make it easier to compare we do not explicitly address the amount of pension, but the

value of the pension account at the date of retirement. We defined the virtual retirement account in the first pension pillar, whose value is calculated as the present value of pension payments (we assume a constant level of pension in time), assuming inflation 2%.

In this case we got following results. The amount of monthly pension from first pension pillar reached the amount of 553.72 €. Since we assumed that the average life expectancy for men is 75 years, therefore employee would receive a pension for 10 years. Thus, we calculated the present value of these payments at the level of 60 178.69€. In addition, we calculated the value of savings in the second pillar pension amounting to 149 992.84€. The total present value of future pensions will then be 210 171.53€.

In order to view the impact of changes in the ratio of distribution of payments between the first and second pension pillar we will use the previous example. For this case we define the states of share to the second pension pillar from zero up to the eventual 100% of contributions. Evolution of the total present value of retirement account increases with the use of the second pillar.

Fig. 2 Evolution of the current value of the pension account at the time of retirement (2045)



Source: original research

5 The volume of paid pensions

In this section we will show the volume of paid pensions. Based on available data [10], we identified a total cumulative amount of pensions paid for the years 2005 to 2010. Based on these values, we calculated the average monthly amount of pensions paid in that category. Data for 2011 were calculated only on the first three months of 2011, and from them the monthly average was calculated.

In Tab. 3 we see that the volume of the average amount of accumulated pensions paid per month in 2011 increased. It is caused by increasement of the nominal value of the pension, but this effect is minimal. In contrast, a significantly higher impact is caused by growing numbers of recipients of various pensions. Thus we can prove the increasing pressure on the government budget expenditure trough the Social Insurance Agency. Those types of pensions are covered by contributions to pension insurance.

Tab. 3 Comparison of the average monthly amount of income in given years

Pension	(in thousands of € per month)						
	2005	2006	2007	2008	2009	2010	2011
retirement pension	215503,6292	232547,293	252479,1266	268554,67	299615,25	313181,83	342812,29
early retirement pension	3856,079466	9994,036148	13481,03522	18225,417	20019,167	19987,25	16865,495
disability pension	35153,51633	38375,42877	42542,97783	46695,667	51854,917	54701,667	53299,019
widow's and widower's pension	32397,12375	34813,04631	38069,92575	40720,667	44364,5	45564,75	72555,38
orphan's pension	2433,401945	2746,622519	3398,80004	3465,417	3707,5	3606,917	3644,2255

Source: Sociálna poisťovňa, 2011b

Conclusion

On previous developments we have seen that the PAYG pillar in the present way of determining the amount of pension implies that pension share should be at about 50% against the amount of wage which the employee received. This represents a significant leap in quality of life of this man, because his income will be significantly reduced, while its costs will have not decline so significantly. That will limit this man in his living and in enjoying various activities provided by the market.

We also showed the impact of changes in the share of contributions to the ongoing and savings pillar on an example of employee working 40 years. Those results are calculated based on the input parameters and constraints that we defined earlier.

In addition we also compared the average monthly amount of pensions paid in 2005 to 2011. We found that the number of pensioners is increasing, which is the biggest burden on the state budget.

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References

- “Aktuálna dôchodková hodnota” *Sociálna poisťovňa*. 2011a. 15 April 2011
<<http://www.socpoist.sk/slovník-pojmov/11s?&prm1=670>>
- “Kumulatívne výdavky na dôchodkové dávky” *Sociálna poisťovňa*. 2011b. 15. April 2011
<<http://www.socpoist.sk/kumulativne-vydavky-na-dochodkove-davky/1645s>>
- “Priemerná mzda” *Štatistický úrad*. 2010. 15 April 2011
<<http://portal.statistics.sk/showdoc.do?docid=187>>
- “Prognóza pracovnej sily v krajoch SR do roku 2025” *Infostat*. 2006b. 20 April 2011
<<http://www.infostat.sk/vdc/pdf/pracsily.pdf>>
- “Prognóza vývoja obyvateľstva SR do roku 2025” *Infostat*. 2004. 20 April 2011
<<http://www.infostat.sk/vdc/pdf/progokr.pdf>>
- “Prognóza vývoja obyvateľstva SR do roku 2025” *Infostat*. 2006a. 20 April 2011
<<http://www.infostat.sk/vdc/pdf/prognoza07.pdf>>
- “Zákon č. 461/2003 Z. z. o sociálnom poistení v znení neskorších predpisov.” *Elektronická Zbierka zákonov*. 27 November 2003. 13 July 2011.
<<http://www.zbierka.sk/zz/predpisy/default.aspx?PredpisID=17467&FileName=03-z462&Rocnik=2003>>
- BOBÁKOVÁ, V. *Finančné rozhodovanie podniku*. Bratislava: Ekonóm, 2006.
- CIPRA, T. *Pojistná matematika - teórie a praxe*. Praha: Ekopress, 2006.
- VLACHYNSKÝ, K. a kol. *Podnikové financie*. Bratislava: IURA Edition, 2006.

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