**M.Voskanyan, Avanesyan A.**

**ARMENIAN PENSION SYSTEM REFORM: PROBLEMS, PROSPECTS, OPPORTUNITIES.**

Key words: pension system, reform, transition economy.

**Abstract**

Pension system has been around for quite some time, so it is not surprising that there are many ways that a country can engineer an elderly support system. However, despite the large amount of pension system models, none of them is considered perfect/effective. The issue of constructing an effective pension system is especially sharp in developing and transition economy countries, where most of the pension systems are publicly managed, and local governments often prove to be ineffective at managing the system, in this regard Republic of Armenia is not an exception.

One may think that the developed countries should have developed some kind of “most effective” pension system model, but this would only partially be true. Although the developed countries usually have much more effective pension systems (both privately and publicly managed) than developing and transition countries, they are generally considered at least “non-perfect”.

Each country, whether it is OECD member or transition economy, is working to improve its pension system, and once again, Armenia is no different. To improve the current situation with elderly support, the government of RA has initiated a thorough and cardinal reform of operating pension system. Thus in 2010 legislation on “funded pensions” was passed, according to which Republic of Armenia is going to replace the «old» PAYG model with a multypillar funded pension system in 2014. Main goals of the reform are as stated: budget deficit reduction, increase in the wage substitution rate, national savings accumulation as well as increasing general financial literacy of the population /as a side goal/. Despite the possible positive outcomes, there may be several negative results, which can bring great losses upon private and public sectors of Armenian economy. The main source of such risks is a number of «weak spots» in the reform.

Considering the possibilities mentioned above, we assume, that the issue of Armenian pension system reform is important enough to be thoroughly researched and discussed.

Current Armenian pension system model is an adapted version of PAYG system, the latter is often referred to as the «Bismarck model». This system puts the burden of sustaining the elderly on the current working population. The older version of Armenian PAYG (A-PAYG) was collecting mandatory social payments from the working population; those payments were then gathered in a «unified fund» (also «unified pot» principle), from where the actual allocation of funds to the population eligible for government funded social programmes[[1]](#footnote-1) took place.

The reform is based of several country experiences, as well as the «Averting the Old Age Crisis» research by World Bank (1994). The latter can be concidered a stepping stone or some king of «bile» for most of the pension system reforms through late nineties and the beggining of the 21st century. According to this paper, pension systems usually consist of combination of 3 fundamental pillars:

1. The basic/social pension
2. The mandatory funded pension
3. The voluntary funded pension

Later on, in 2010 2 more pillars were added: the zero pillar, represented by basic unconditional social pensions, and the 4th pillar, which was represented by social (non-official and non-mandatory) support of the elderly.

Main participants of the «new» pension system are going to be hired workers, as well as individual enterprenuers (self-employed) and registered notaries, born after year 1974. As soon as the system has started working, no «turn-back» sceanrio is possible for people born after 1974, meaning that the transition to the new system will be mandatory. The «new» pension system generates inputs from government and people eployed into a pension saving account. Government support is progressional, meaning that the higher the wage/mandatory inputs, the more government support will be recieved[[2]](#footnote-2). The participants are beeing given an opportunity to buy shares of pension funds, proportional to saving accumulated. Any restriction on buying shares imposed on participants is prohibited, meaning that pension funds will have to sell shares upon request.

Pension funds are reuired to invest into either highly liquid or highly safe (BB+ to AAA+ rating, Mundis) sequrities. Although there are close to no doubts on safety of such investments, there is always a risk that those sequrities are at risk of not covering national inflation level. Another poblem with high safety requirments is Armenias own safety rating, and low level of financial market operations as well as low level of trust in the society.

Considering the statements mentioned above, the «new» system has own risks and possible efficiency issues, which makes it wothwhile to consider alternative reform possibilities.

We have already mentioned that the «new» system is supposed to make up for the mistakes of the «old» system. One of such mistakes can be considered the exclusion of vulnerable rural population from the social pension system. Such exclusion is explained by the governments inability to collect taxes from rural areas, where most of the population is self employed in agriculture, thus making it close to impossible to collect social pensions. Thus the «old» system was discriminating people by economic activity and living area.

The «new» system is based on mandatory savings, which can be considered a form of income tax, as the collection technique is essentially the same. This is the reason why the rural population will once again be deliberately excluded from pension system itself. Thus the issue of rural population will remain unsolved. Moreover the «new» system is providing goverment support according to mandatory inputs into system[[3]](#footnote-3), by doing so the pension system is loosing its role as a tool of income distribution from wealthy to relatively poor.

**The old system**

First let us state that it is close to impossible to say for sure if the RA pension reform will succeed or fail. Even though, we should give it a try. In this regard, we will start our analyses with the PAYG system, that is currently in operation.

The first thing that catches an eye in the PAYG system is its vulnerability to the risks created by ageing of population. In Armenia this issue is especially sharp; the number of elderly people, eligible for full defined social pension support by year 2025 will amount to 600 thousand(Graph 1). Here the main issue is not the quantity of “pensioners”, but the ratio of elderly people to the working age population. According to ARMADS, published by the ministry of finance of Republic of Armenia, this ratio will hit a record low of 1.04 by 2024 with a following decrease to the point of 1.03 by 2025, meaning that there will be more elderly people than working age population, this is certainly bad news for PAYG system.

|  |  |
| --- | --- |
| **Graph.** **1. Pensioners in RA (thsd.).** | Рис. 2. **Ratio of elderly to working age population[[4]](#footnote-4)** |
|  |  |
| Source: ADS Draft Ministry of Finance of RA | Source: ADS Draft Ministry of Finance of RA |

Even now, the PW ratio equals 1.00, meaning that for 1 person eligible for full scale pension support, there is only 1 worker, paying for that pension.

The issue of ageing population must not be underestimated, as it poses a strong social and economic threat to a country and its people. However we have to be careful not to make the mistake of underestimating productivity growth of labor force, and possible technological breakthroughs. If there are no breakthroughs in productivity field, such as innovations in various fields of production, we may assume that the pension system will be the least of our problems.

Table 1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Year** | **Pension spending/ GDP** | **Working pensions/ GDP** | **Financing Gap/ GDP** | **Social payments/ GDP** | **Total expenses on Working pensions/ gov. Budget** |
| **2012** | **4.98%** | **4.2%** | **0.92%** | **3.2%** | **16.6%** |
| **2013** | **4.48%** | **3.8%** | **0.94%** | **0.0%** | **14.6%** |
| **2014** | **4.83%** | **4.2%** | **0.85%** | **0.0%** | **16.2%** |
| **2015** | **5.00%** | **4.31%** | **0.89%** | **0.0%** | **16.8%** |
| **2016** | **5.54%** | **4.77%** | **0.89%** | **0.0%** | **18.2%** |
| **2017** | **5.57%** | **4.80%** | **0.99%** | **0.0%** | **18.1%** |
| **2018** | **5.57%** | **4.81%** | **1.16%** | **0.0%** | **17.9%** |
| **2019** | **5.61%** | **4.85%** | **1.19%** | **0.0%** | **17.8%** |
| **2020** | **5.67%** | **4.91%** | **1.23%** | **0.0%** | **17.8%** |
| **2021** | **5.73%** | **5.0%** | **1.12%** | **0.0%** | **17.8%** |
| **2022** | **5.81%** | **5.1%** | **0.98%** | **0.0%** | **17.9%** |
| **2023** | **5.90%** | **5.1%** | **0.86%** | **0.0%** | **18.0%** |
| **2024** | **5.97%** | **5.2%** | **0.76%** | **0.0%** | **18.2%** |
| **2025** | **6.00%** | **5.3%** | **0.76%** | **0.0%** | **18.3%** |

Source: ADS Draft Ministry of Finance of RA, National Statistic Service of RA

The GDP growth is forcasted at the level of 10%, until late 2017, with a following decline in dynamics. Such level of growth, if achieved, will make it possible for the public sector to sustain the current pension system. Moreover, due to economic growth, and concidering armenian social model, non-formal support of the elderly will increse as well, thus increase the value of general consumption bundle, available to the elderly.

The average pension in 2012 amounted to 31,000 AMD, whereas the minimum social pension was 16,000 AMD. Those amount are not enough for sustaining a fair ammount of consumtion, thus the government is planning to increse minimum-social and security pensions to 54,000 AMD and 117,000 AMD respectivly by 2025. Thus both security and minimum-social pension ratio to the average wage will remain stable with a slight increase, and ammount to 22.4% and 11.2% respectively. Those ratios will still be much lower compared to the OECD countries.

If the pension support level mentioned above is reached, the public spending on minimum-social pensions and security pensions will take up 18.3% of total government spending, and reach 5% of Armenian GDP by year 2025.

Table 2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **Working pensions/ Middle poverty tier** | **Working pensions/ upper poverty tier** | **Working pensions/ MCB** | **Working pensions/ Severe poverty rim** |
| **2012** | **109.8%** | **89.8%** | **70.3%** | **157.3%** |
| **2013** | **104.9%** | **85.8%** | **67.3%** | **150.3%** |
| **2014** | **121.9%** | **99.7%** | **78.2%** | **174.7%** |
| **2015** | **134.6%** | **110.1%** | **86.0%** | **193.0%** |
| **2016** | **157.4%** | **128.7%** | **100.0%** | **225.6%** |
| **2017** | **166.7%** | **136.3%** | **105.5%** | **238.9%** |
| **2018** | **174.6%** | **142.8%** | **110.0%** | **250.2%** |
| **2019** | **183.5%** | **150.1%** | **115.0%** | **263.0%** |
| **2020** | **192.8%** | **157.6%** | **120.0%** | **276.3%** |
| **2021** | **202.0%** | **165.2%** | **125.0%** | **289.5%** |
| **2022** | **211.2%** | **172.7%** | **130.0%** | **302.6%** |
| **2023** | **220.5%** | **180.3%** | **135.0%** | **316.0%** |
| **2024** | **229.9%** | **188.0%** | **140.0%** | **329.5%** |
| **2025** | **239.5%** | **195.9%** | **145.0%** | **343.2%** |

Source: ADS Draft Ministry of Finance of RA, National Statistic Service of RA

It is easy to note, despite relatively stable expenditure growth, the ratio of pension spending to the total public spending remains dangerously high. Actually it is higher than the average OECD ratio,despite the fact, that Armenian system covers only the formal employment sector.

In 2012 the average security pension was covering 89.8% of higher poverty tier and 70.3% of minimal consumption bascet. The latter ratio is scheduled to increase by 10.2% by year 2016, and reach the coverage level of 145% by 2025. Thus we can state, that part of the gradual increase of public spendings on pension system will be due to increase in average pension level, which will surely increase the welbeeing of the elderly population eligible for security payments.

Despite the rise in pension payments, the ratio of pensions to the average wage will not rise past the levels of 2012 (25.8%). Actually, the ratio mentioned above is projected to decrease. This is bad news, considering the fact that flattening the income level of an individual over his/her lifetime is sometimes considered the main reason of existance of pension systems, however we should consider the following: Armenia is not a developed country, the Republic of Armenia is facing the problem of ageing population, uncommon for countries with similar development and income levels (disregarding the CIS countries), the issue of poverty is still acute, especially in regard of elderly poverty. To sumarize- «Armenia is a relatively poor country with ageing population», thus the primary goal should be «fighting» poverty and not flattening the income over life time.

Table 3

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Year** | **Basic social pension (thsd. AMD)** | **Minimal consumption bascet (thsd AMD)** | **Basic social pension/ working pension %** | **Basic social pension/lower poverty tier %** | **Basic social pension / severe poverty rim %** | **Elderly population (thsd. p.)** |
| **2012** | **16.2** | **44.6** | **51.7%** | **56.8%** | **81.4%** | **347.1** |
| **2013** | **16.3** | **46.6** | **51.8%** | **54.4%** | **77.9%** | **347.1** |
| **2014** | **18.3** | **48.4** | **48.5%** | **59.1%** | **84.7%** | **348.7** |
| **2015** | **21.3** | **50.3** | **49.2%** | **66.3%** | **95.0%** | **352.5** |
| **2016** | **26.2** | **52.3** | **50.0%** | **78.7%** | **112.8%** | **356.7** |
| **2017** | **28.7** | **54.4** | **50.0%** | **83.4%** | **119.5%** | **362.0** |
| **2018** | **31.1** | **56.6** | **50.0%** | **87.3%** | **125.1%** | **370.1** |
| **2019** | **33.8** | **58.9** | **50.0%** | **91.7%** | **131.5%** | **380.0** |
| **2020** | **36.7** | **61.2** | **50.0%** | **96.4%** | **138.1%** | **392.1** |
| **2021** | **39.8** | **63.7** | **50.0%** | **101.0%** | **144.7%** | **406.2** |
| **2022** | **43.0** | **66.2** | **50.0%** | **105.6%** | **151.3%** | **422.3** |
| **2023** | **46.5** | **68.9** | **50.0%** | **110.2%** | **158.0%** | **440.1** |
| **2024** | **50.1** | **71.6** | **50.0%** | **115.0%** | **164.8%** | **458.7** |
| **2025** | **54.0** | **74.5** | **50.0%** | **119.7%** | **171.6%** | **474.7** |

Source: ADS Draft Ministry of Finance of RA, National Statistic Service of RA

Untill recently the pensionable age was 65 for men and 63 for women, at this age an one could aply to recieve a social pension. Such pensions are targeting the informal sector workers and the population of rural areas of RA. The latter is targeted because of beeing left out of the security pension system, which requires several years of working experience in the formal sector. It is common knowledge that rural population is self employed in agriculture, thus making experience tracking impossible. Despite lower pension levels, rural population is generally less vurnelable to the elderly poverty risks, due to stronger familism in rural comunities.

The ratio of social pensions to the average security pensions will not break the 50% line. The social pensions are designed as an anti-poverty tool; however their efficiency is questionable, as they are not able to cover any of the three poverty tiers, as well as the MCB. This issue is projected to be partially solved by gradually increasing the amounts payable, and reaching the extreme poverty tier by 2016 and overbidding the lower poverty tier by 2021. Despite those changes the MCB level will not be breached even by year 2025.

The current pension system will actually cause increase in budget deficit, however in the end the deficit may be a fair price for the increase in income of the elderly population, who did earn the right to receive sufficient government support, by living and working on the territory of RA.

**«The new system»**

As we have already stated above, the new system will start operating in year 2014; individuals born after 1974 will be automaticly included. The new system is expected planning to increase national savings level and create long term investmenst. Initial participance level is estimated at 170,000 initial participants who will be investing 5% of their income. The participance level is projected to increase by 50,000 participants a year, and reach 600,000 participants till year 2025.

|  |  |
| --- | --- |
| Graph 3. **Government inputs into the pension system (bln AMD).** | Рис. 4. **Total government pension spending (public sector, bln. AMD).** |
|  |  |
| Source: ADS Draft Ministry of Finance of RA, National Statistic Service of RA | Source: ADS Draft Ministry of Finance of RA, National Statistic Service of RA |

Initially government expects to investment 18 mln AMD into pension system, as promised 5%. This amount is supposed to increase ten times till year 2025 (181 mln AMD).

Although the level of government participance in the system seems significant, there may be some questions, related to the possible rise of CPI and average wages, as there is a limit set to 25,000 AMD per individual pension saving account per month. Will this ammount be overbid by increase in aveage and/or median wages, and if so will the government raise the financial support limit? To answer such questions, we should concentrate on yearly increase of average wage in RA. According to the latest forcasts, if the average level of financial support per pension account will be 6000 AMD per monthin year 2014, and 24000 AMD per month in year 2025. Thus we can state that according to the government of RA the financial support borderline is not supposed to be breached by increasing average wage levels at leas in mid-term. Considering the fact that the risk of major shocks to the labor market is low enough, we may assume that the projections mentioned above are accurate. Unfortunately we don't have any data on long-term forecasts, making it impossible for us to access the risks of increasing wages and CPI in the long-run.

Table 4

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Average wage** | **Public inputs** | **Private inputs** |
| **2012** | **121,300** | **6,065** | **6,065** |
| **2013** | **153,400** | **7,670** | **7,670** |
| **2014** | **169,800** | **8,490** | **8,490** |
| **2015** | **188,800** | **9,440** | **9,440** |
| **2016** | **209,300** | **10,465** | **10,465** |
| **2017** | **231,400** | **11,570** | **11,570** |
| **2018** | **253,600** | **12,680** | **12,680** |
| **2019** | **278,100** | **13,905** | **13,905** |
| **2020** | **304,900** | **15,245** | **15,245** |
| **2021** | **334,100** | **16,705** | **16,705** |
| **2022** | **366,100** | **18,305** | **18,305** |
| **2023** | **401,200** | **20,060** | **20,060** |
| **2024** | **439,900** | **21,995** | **21,995** |
| **2025** | **482,000** | **24,100** | **24,100** |

Initial government spending on pension system in year 2014 will be aproximately 50% of total investments, ammounting to 36.9 bln AMD, whereas future governemt spending in year 2025 is forecasted at 2 bln AMD.

Table 4

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Gross private inputs (mln AMD)** | **Total inputs (mln AMD)** | **Accumulated inputs** | **Public inputs (mln AMD)** |
| **2014** | **18,900** | **36,900** | **36,900** | **18,000** |
| **2015** | **26,250** | **51,250** | **88,150** | **25,000** |
| **2016** | **40,743** | **79,545** | **171,378** | **38,803** |
| **2017** | **49,177** | **96,012** | **267,390** | **46,835** |
| **2018** | **59,309** | **115,793** | **383,183** | **56,484** |
| **2019** | **71,247** | **139,101** | **522,285** | **67,854** |
| **2020** | **85,216** | **166,375** | **688,659** | **81,158** |
| **2021** | **101,424** | **198,018** | **886,678** | **96,594** |
| **2022** | **120,400** | **235,066** | **1,121,744** | **114,667** |
| **2023** | **142,360** | **277,942** | **1,399,686** | **135,581** |
| **2024** | **167,681** | **327,377** | **1,727,063** | **159,696** |
| **2025** | **190,555** | **372,036** | **2,099,099** | **181,481** |

The yearly investments into the pension system will be 372.3 bln AMD in year 2025. It is clear that Armenian financial markets will not be able to create adequate supply of securities as they are now. Thus the pension finds managers will have to look for other investment opportunities, such as national and foreign government loans, banking sector deposits and securities issued by international companies with the highest safety rating. According to the forecasts of several experts of AVAG solutions, there is a possibility of most investments flowing into government bonds; hereafter we will assume that 100% of investments flow into government 25 year maturity bonds. On one hand this will allow for the substitution of foreign debt with a sovereign one, on the other hand the government will have % to pay, which will increase total government spending on tier 2 system, raising it to the level of 193 bln AMD per year by year 2025.

|  |  |
| --- | --- |
| Graph. 5. **Government expenses on tier 2 system % of GDP.** | Graph. 6. **Total government pension system related expenses, mln. AMD.** |
|  |  |
| Source: ADS Draft Ministry of Finance of RA | Source: ADS Draft Ministry of Finance of RA |

By implementing the reform, government of RA hopes to lower the government deficit due to decrease in spending on the national pension system. Indeed the government spending on tier two systems will take only 1.35% of GDP by year 2025, which is considerably lower, compared to how much the government spends now. However, the PAYG system will remain operational till year 2050, meaning that RA will have to increase «pension spending» at least for 36 years. As a result, pension spending in year 2014 will amount to 5.2% of GDP, and 7.3% in year 2025. This tendency will hold until year 2050, when there will be no more new PAYG pensioners, meaning that the spending levels will start to decrease. Thus we have established that one of the goals, specifically the decreasing Gov. spending goal, is not reached at least in 36 years.

Let us consider the second goal of pension system- the flattened income curve over individual life time. To calculate the possible replacement rate, we have chosen individuals born in year 1974 as a target group. We then made a set of basic assumptions such as: everyone in this age group is earning the average salary and gets a raise as soon as the average salary increases, the government does not change the «support» rate and does not raise or lower the maximum support limit. Following those assumptions and using data from 2000-2025y interval, where 2013-2025 was the forecast data from ARMADS, we have been able to derive a linear wage growth formula in time:

AWy=**24,309\*Y - 48,841,209**

**Here AWy- Average Wage in year Y, Y- the year in question.**

**Then we get the following graphs:**

|  |  |
| --- | --- |
| Рис. 7. **Average wage, thsd AMD** | **Рис. 8. **Monthly inputs into individual accounts, thsd AMD.**** |
|  |  |
| Source: ADS Draft Ministry of Finance of RA, National Statistic Service of RA | Source: ADS Draft Ministry of Finance of RA, National Statistic Service of RA |

**According to our calculations, average wage in year 2061 will be around 1,2 mln amd per month. The government support has a limit, so in aproximately in year 2029 the private investments will on average be much grater. As it was already mentioned above, we are making an assumption, that the pension fund managers will recieve both public and private investments/savings in the beggining of the year, and invest them in government bonds with 25 years till maturity.**

**This will greatly increase the demand for government bonds, lowering the intrest rate, which will remain in the interval of 7.2%-7.6% after year 2021. Note that the rate mentioned above is also an assumed rate, and the actual rate may be much different after year 2025.**

**Table 6**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021-2038 |
| Profitability of State bonds | **10.8%** | **10.0%** | **10.3%** | **10.2%** | **9.2%** | **8.7%** | **8.2%** | **7.6%** |

**If the mentioned above assumptions hold, investment into the pension system may be able to sustain yearly substitution rate of 38% for men, and 31% for women**[[5]](#footnote-5)**. There are two factors contributing to the lower substitution rate for women:**

1. **Lower average wages**
2. **Longer life expectancy**

**General conclusions and suggestions.**

In this part we have tried to solve the isues unresolved by the «old» and «new» systems. To accomplish our goal we have developed two concepts of elderly support model, which may solve the issues of th rural population beeing left out, and difficulty of pension spending planning issue.

***1.1. Old age support system, with income as function of years lived***

The basic assumption here is that the government is not able to determine the amount of an individuals contribution to society, or created utility over lifetime. One could suggest using wages as an indicator, however this indicator often fails to show the real value of an individuals contribution; consider the case of school teacher and CEO of a mining company. The other method to evaluate ones contribution is to calculate the working experience over lifetime, however this method leaves out the rural population and some other layers of population that cannot afford to work in the formal sector or are physically incapable to do so.

Neither of the systems is addressing the issues mentioned above. Moreover, through the new system the government is providing support only to the formal sector employees leaving out the rural sector completely; through the system is designed in a way, when the higher wage means higher level of government support.

To solve those issues we offer the following system model.

The government of RA is accepting liabilities to provide pension support as soon as an individual reaches the age of 18. The liabilities grow with every complete year that a person lives in RA. The year is announced complete if the person in question have spent 8 month or more in Armenia and is а citizen of RA. The right to receive pension support is achieved if an individual is living in RA when he reaches the pensionable age, without the in this model we are proposing to use either of two indicators the monthly pension will be tied to:

1. The average wage in the current year
2. The special MCB for the elderly

In the first case the system aims to flatten the income curve over life time and decrease the difference in incomes among the elderly and working population. To do so the monthly pension support level is calculated according to the following formula:

**P = K \* T**

**K= R \* AW / Y**[[6]](#footnote-6)

Here P stands for average monthly pension, T is years lived in RA, K the value of one year lived, R the wage replacement rate that the government targets to achieve, AW current average wage and Y is the max possible amount of years lived in RA.

Thus to get the maximal pension support one has to live on the territory of RA for at least 47 years. In the table below we have discussed the three possible outcomes, depending on the replacement rate, set by the government:

Table 7

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| N | Substitution rate | Max possible monthly pension 2061 | Max possible of pensioners (elderly)\* | Max monthly expenses in the first year of operation | Value of one year lived |
| 1 | 40% | 503855.9636 | 44239 | 22,290,215,537 | 10720.33 |
| 2 | 30% | 377891.9727 | 44239 | 16,717,661,653 | 8040.25 |
| 3 | 25% | 314909.9773 | 44239 | 13,931,384,711 | 6700.21 |
| *\*By Max possible number of pensioners we mean the greatest possible number of elderly population who will have rights of receiving full scale pension support (in this case we assume the migration and death rates at 0)* | | | | | |

***1.2. The minimal consumption basket for the elderly model***

The other way to calculate the pension support level is to set a special MCB and CPI for the elderly. In this case the government will be setting the replacement rate relative to the MCB.

The necessity of elderly MCB is explained by the fact, that an individuals consumptions changes over lifetime, however at some point, which is considered to be the pensionable age, the consumption changes are more noticeable. Elderly people consumption bundle is usually much different from the one of the working population, meaning that the CPI for the elderly might also be different. Thus the government may over or underpay the elderly.

The concept of the elderly CPI has been proposed in U.S.A. Congress and Israel, however the concept is still in experimental development stage.

Note that the importance of the elderly CPI does not decrease as the transition to multi-pillar system takes place. The main point here lies in the announcement of CBA, regarding regulations on pension fund investment security. The pension fund managers will have to choose between risky and high profitable securities, or the safe and low paying ones. However there is one more factor in play, and that is the CPI ot the inflation rate. The pension funds will have to accomplish significant levels of returns from investments, and may have to invest into more risky obligations as the inflation grows. The international practice has shown that the elderly CPI is usually less than the “normal” CPI, meaning that the usage of elderly CPI will allow for safer investments.

At this point in research we will assume that the MCB for the elderly is the same as for the working age population[[7]](#footnote-7), meaning that the CPI is also the same, thus we are going to fix it at the projected level of 4.5% yearly.

The equation to calculate the pension support level is the same as in the 1.1 model, however here we are replacing the AW with B, the latter is th MCB for the elderly. Thus we get the following equation:

**P = K \* T**

**K = R \* B / Y**

Here P stands for average monthly pension, T is years lived in RA, K the value of one year lived, R the wage replacement rate that the government targets to achieve, B is the MCB for the elderly population and Y is the max possible amount of years lived in RA.

In this case the replacement rate will be calculated as the ratio of the monthly pension support to the MCB of 2061, with the assumption of 4.5% yearly inflation holds.

Table 8

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N | Substitution rate, % of MCB | Max possible number of pensioners (elderly) | Max possible monthly expenses | Value of one year lived |
| 1 | 140 | 44239 | 23,871,674,073 | 11481 |
| 2 | 120 | 44239 | 20,461,731,953 | 9841 |
| 3 | 100 | 44239 | 17,051,789,833 | 8201 |

In case of model 2 usage, the government expenses are higher than in case of model 1. However both models contain too many assumption, which may not hold in the long term. Thus this research should be considered as a proposition of alternate models of pension system reform and their rough estimates. First off, we can not determine the state of the budget or GDP, so it is impossible for us to calculate pension spending to budget or pension spending to GDP ratios, next the cost of MCB is expected to increase at a stable rate, however it may stop increasing at some point in time, or even decrease, note that the opposite scenario is also possible.

**Conclusion**

We have been able to identify some flaws that may or may not decrease the efficiency of the new malty pillar system. Among those flaws were the progressive government support, the issues of rural population and non-formal sector employment etc.

The models that we have proposed above, are offering a solution to the issues mentioned above, and are applicable both for current system parametrical change and the remaining social tier in the upcoming malty pillar system.

1. Pension system included. [↑](#footnote-ref-1)
2. Untill a certain income level is reached. [↑](#footnote-ref-2)
3. The same ammount as a monthly mandatory input, but no more than 25,000 AMD [↑](#footnote-ref-3)
4. Here the elderly age is concidered 65 years, meaning that the elderly population and the pensioners are the same. [↑](#footnote-ref-4)
5. Here the substitution rate is calculated as ratio of monthly equalized payments to indivudual till «life expetancy age» to the average wage. [↑](#footnote-ref-5)
6. Y=”pensionable age” – “legislative maturity age”, in this case Y=47 [↑](#footnote-ref-6)
7. This is done because as for now, we are not able to determine the MCB for the elderly population [↑](#footnote-ref-7)