# THE PENSION FORMULA IN ROMANIA – INEFFICIENCIES AND POSSIBLE SOLUTIONS[1]

**Bogdan-Andrei DUMITRESCU, PhD***
**Andreea Elena DRĂGHIA****

**Abstract**

The introduction of the correction index in the mechanism of determining pension benefits in Romania in 2013 has led to an inefficient formula which generates differences between the incomes received by pensioners with the same level of contributions depending of the year of retirement. This paper reveals the mechanism through which these inefficiencies are generated, their consequences and analyzes the formula proposed by a new pension law against this issue. We conclude that the new formula has the potential to solve this problem, but with a relevant budgetary cost and emphasize the challenge between balancing the costs generated by the change of the formula and the objective of increasing the value of the pension point, while dealing with the sustainability of public finances.

**Keywords:** public pensions, inequity, Romania

**JEL Classification:** H55, J11, J26

## 1. Introduction

The main objective of a pension system is to protect the elderly people against poverty, as well as to provide the necessary resources and conditions for them to live a decent and economically independent life. In the majority of the states, retirement income comes from redistributive public systems, based on intergenerational solidarity (pay as you go).

---

[1] *A preliminary version of this paper has been presented at the 17th edition of the International Finance and Banking Conference FI BA 2019 which took place in Bucharest, Romania on March 28-29, 2019.*

* *Associate Professor, Faculty of Finance and Banking, Bucharest University of Economic Studies, Bucharest, Romania.*

** *Faculty of Finance and Banking, Bucharest University of Economic Studies, Bucharest, Romania.*

In recent years, the rapid pace of population ageing led to a significant increase in the number of pensioners. Moreover, the European Commission's projections show that, due to changes in the population structure, by 2070, people over 65 years will represent almost 44% of the total population in the EU, increasing with 9 pp compared to 2016. Consequently, the ratio between the population aged over 65 years and population aged between 15 and 64 years (old-age dependency ratio) will increase from 29.6% in 2016 to 51.2% in 2070. In the case of Romania, the total population estimated for 2070 is 14.98 million, and the old-age dependency ratio is 52.8%. The increase of longevity and the retirement of the baby-boom generation (the generation born after the Second World War) will have significant economic effects that will materialize in reducing the potential of economic growth and pressures on public finances, especially at the level of the pension system.

The slowdown in economic growth, budgetary deficits, financial instability and high unemployment rates represent difficulties that could prevent pension systems from fulfilling their mission. Hence, is necessary for states to develop and implement appropriate measures to adapt pension schemes to economic and demographic conditions which are constantly changing. An efficient pension system must prevent a dramatic drop in the income on retirement, provide a correct level of the benefits related to realized contributions, not encourage retirement of individuals as long as they are fit to work, provide incentives for employees to contribute at the level of the fair salary, but the most important principles to be respected are long-term adequacy and sustainability.

The main objective of this study is to show the inefficiencies of the current formula for calculating pensions in Romania and its consequences on the equity principle and also to analyze if the formula proposed by the new pension law solves current problems. The novelty of the study is represented by the fact that this in-depth analysis of the current pension formula in Romania and of its consequences is the first of its kind. We expect that our arguments and conclusions to be of great interest for Romanian public authorities and the Romanian citizens in a broad sense.

The remaining of this paper is organized as follows: the next section performs a broad characterization of the key issues regarding the pension system in Romania, section 3 reviews the literature dealing

with fundamental principles of a public pension system in general, and section 4 contains the case study while the final section concludes.

## 2. Characterization of the pension system in Romania

The Romanian pension system operates in accordance with Law no. 263/2010 on the unitary pension system, as subsequently amended and supplemented. It is structured on three pillars:

- First pillar – the public pension system which function according to the following principles: redistribution, uniqueness, mandatory contributions, equal rights and social solidarity; it aims at ensuring a minimum standard of living and preventing poverty for pensioners;
- Second pillar – mandatory, privately managed pensions; this component aims to provide a better standard of living in accordance with the period worked;
- Third pillar – voluntary, privately managed pensions, that are based on savings of the people who want a higher retirement income.

The three pillars system was recommended by the World Bank (1994) in the report entitled “Averting the Old Age Crisis”. In 2005, two other components were introduced, justified by the fact that a multi pillar system has a greater ability to achieve the objectives. Additionally, this approach is more efficient in reducing the economic and demographic risks faced by pension systems.

In Romania, the standard retirement age is 65 years for men and 63 years for women (for women this target is set to be achieved progressively by 2030). The minimum contribution period is 15 years and the full contribution period is 35 years. There is possible to grant early retirement with a maximum of 5 years before reaching the legal age, if the individual has contributed at least 8 years longer than the statutory period. Individuals who do not meet this criterion receive partial early retirement, being penalized for each year of unpaid contribution. In addition to these forms, is also granted an invalidity pension when the person loses at least half of the work capacity and a survivor pension for children (up to the age of 16 or 26 under certain conditions) and / or for the insured's spouse. The current level of the replacement rate for regular pensioners calculated as average pension over average net salary in the economy is about 43%.

### 3. Fundamental principles of a public pension system

As mentioned above the pension systems must be, first and foremost, adequate and sustainable. Chybalski (2015) identified four dimensions for efficiency of a pension system: pension adequacy, the distribution of GDP, the influence on the labor market and the administrative costs. According to the literature, an adequate system implies the adequacy of retirement income. Banks et al. (2005), Holzmann and Hinz (World Bank, 2005) analyzed the adequacy of the pension system by means of two approaches: the absolute level and the relative level (the replacement rate of the working period's income) of the pension. The European Commission introduced a third perspective, the period of retirement. The studies have shown that an adequate level of pension income protects against old age poverty and ensures that living standards are maintained after retirement. Holzmann and Guven (2009) analyze the replacement rate as "an useful instrument for quantification the adequacy of pension benefits, because they represent benefits reported to the income before retirement, thus indicating the degree to which income is replace at pension". Chybalski (2012) noted that the adequacy of pension system takes into account the income, the degree of poverty and the "differentiation of pensioners' material situation by gender.

Concerning the replacement rate of income, it is specified that it should take into account several factors such as: access to housing and medical care, the propensity of individuals to save, the level of economic development of the country and the level of the average income in the economy. In the literature, a replacement rate between 40% and 55% is foreseen to maintain consumption smooth. A higher replacement rate than this level is unstainable as it implies very high contribution rates. The European Commission also expects that in the future, the concerns of pension systems will increase the focus on reducing the replacement rates.

Sustainability of the pension system refers to its long-term financial soundness. The design of the pension system must be realized in such manner that unexpected measures (increase of contribution rates, diminishing future benefits or significant increase of budgetary expenditures on pensions) are not necessary in order to fulfill their obligations in line with economic developments. At the same time, sustainability is closely related to the ratio workers – pensioners, which mean that pension systems must be able to cope with the aging

of the population without exerting any major pressure on public finances. The ageing report of the European Commission shows that pension expenditures will rise by 0.8 pp of GDP during the period 2016-2040 and will decrease by 1 pp of GDP during the period 2040-2070. In Romania, this expenditure aggregate will increase by 0.7% of GDP between 2016-2070.

In order to comply with the two principles, greater attention should be paid to following aspects when designing the pension systems: setting the legal retirement age, discouraging early retirement, modality (formula) for calculating the pension, predictability, flexibility and simplicity of the system to be understood by the population.

Setting the standard retirement age

Estimates of decreasing fertility and rising life expectancy have led to the need to establish a close link between the minimum retirement age and life expectancy, which has materialized in most countries in the world by raising the standard retirement age. This ensures a longer contribution period that contributes significantly to the sustainability and adequacy of pensions. Schwan and Sail (2013) show that higher degree of sustainability and adequacy of pension system can be achieved when linking retirement ages with future increases in longevity. At the same time, the legislative process for determining the retirement age should take into account the analysis of the ratio between the time spent in the labor market and the retiring period. The work in the field shows that the appropriate number of years spent on retirement should be less than 15. Financial resources generated from a shorter retirement period help to meet the current pension systems objectives.

Reducing early retirement and encouraging participation in the labor market

Early retirement of the population for various reasons results in lower contributions and negatively affects the old-age dependency ratio, which has a significant impact on the viability and adequacy of pensions (OECD, 2005a; OECD, 2015). The lower incomes that early retirees would receive may prevent the primary objective of pension systems to protect against poverty in old age (Queisser and Whitehouse, 2005).

Researches have shown that staying within the labor market as many years as possible contributes to maintaining, even improving, future replacement rates. Early retirement leads to a reduction in the level of savings, with the income of individuals being much lower. At the same time, there are also disadvantages that limit the access of the beneficiaries to social security and medical care. In many cases, early exit from the labor market was justified by the release of jobs for the benefit of young people, but this would only be correct if the jobs in the economy were fixed. Studies have shown that reducing the average retirement age in developed countries did not entail a reduction in the unemployment rate.

In order to reduce early retirement, states must take measures and incentives to encourage people to work for as long as possible: adapting jobs for older workers, the possibility of part-time work while retiring, to provide greater support for the re-employment of people who lose their jobs at an age close to retirement. A very important aspect is investment in the health system. Early disease prevention leads to a reduction in the number of early retirements due to illness.

Method of calculating pensions

The efficiency of a pension system is given by the level of benefits relative to paid contributions, relationship established through the pension formula. Holub (2010) show that the pension income can be determined by two approaches. One way shows that the retirement income can be calculated using a formula based on pension points. Another way to determine the retirement benefits is to apply a percentage to a base derived from the average income from the reference period (contribution period). The two methods of calculation set the reference period of contribution (how the income will be replaced) and the income taken into account when calculating pension benefits.

The sustainability of pension systems can be improved by actuarial adjustment techniques and by changing the way in which the accumulated contributions are valorized and indexed. Valorization refers to the multiplication of previous income by an index to adjust it with salary and price changes which occurred during the reference period. In the case of redistributive pension schemes, the indexation rate represents a profitability rate perceived by the population. Barr and Diamond (2006) pointed out that this rate is set by politicians, so could be the promise of the pension system. But there is also the real rate of

return that can be equated with the concept of internal rate of return because it ensures the balance between the assets and liabilities of the pension system. The difference between the two rates is a risk measure as it expresses the difference between the authorities' promises and the real capacity of the pension system.

Therefore, a formula for calculating pension income should encourage payment of contributions in correlation with the correct salary and for as long as possible. It also needs to be equitable so that those who contribute more to the social security budget benefit from a higher pension (the inclusion of penalties in the formula for calculating pensions for early retirement could reduce the number of such cases). The method of calculating the pension must be predictable. In this respect, benefits must be clearly established by law and adjusted with inflation, salary and interest rates.

### 4. Case study

The current formula for determining pension benefits in Romania is inefficient and is generating inequities between pensioners with the same level of contributions depending on the year in which they retired. Thus, the principle of equal pay for equal contributions is violated. This is due to the fact that the current formula links the valorization of the pension points accumulated during the active life with the gross average wage prevailing in the economy 2 years before retirement while the indexing of pensions which are already in payment is based on the increase in the pension point decided by the Government. All the above implications can be derived from the current formula for determining pension benefits:

$$Pension = Adjusted\ annual\ score * Pension\ point\ value$$

$$Annual\ adjusted\ score = Annual\ average\ score * Correction\ index$$

$$Pension = Annual\ average\ score * Correction\ index * \\ * Pension\ point\ value$$

Where the average annual score is determined by summing the pension points earned during the active life and dividing them to the full contribution period, respectively 35 years with this level being attained for women progressively by 2030, the pension point value is the one decided by the Government and the correction index is a factor introduced in the pension's law in 2013. This correction index is

determined as follows: according to art. 170 of Law 263/2010 it is equal to 43.3% of the gross average salary at the level of the entire economy (in practice for data availability reasons the gross salary is taken with a lag of 2 years, for example for 2016 the reference is 2014) / the value of the pension point / (1 + average annual inflation rate for 2011 - 5.79%, respectively). Briefly, the correction index is equal to about 41% of the gross average wage prevailing 2 years ago divided by the value of the pension point.

Thus, it can be seen from the first formula that the initial pension benefit is not equal to the product between the annual average score and the value of the pension point. Moreover, by the way the correction index is calculated the initial benefit is totally separated from the value of the pension point.

$$Pension = Adjusted\ annual\ score * pension\ point\ value =$$

$$= Annual\ average\ score * \frac{43.3\%\ of\ the\ gross\ average\ salary\ at\ economy\ level}{\frac{pension\ point\ value}{1.0579}} * pension\ point\ value =$$

$$= Annual\ average\ score * \frac{43.3\%\ of\ the\ gross\ average\ salary\ at\ economy\ level}{1.0579}$$

Thus, the initial benefit when an individual is retiring is determined by multiplying the average annual score with about 41% of the gross wage prevailing 2 years before the year of retirement. The increase in the value of pension point is used only for indexing pensions which are already in payment. In order to point the significant consequences on the equity principle of determining pension benefits we will consider an example of an individual who obtained an average annual score of 1 during the active life and retired during 2014-2019. We will compare afterwards the benefit for an individual who retired in 2019 compared to the pension of the individual whore retired in the previous years and whose initial pension determined initially based on the gross average wage as explained above was indexed with the increase in the pension point.

**Table 1**

**The benefits of an individual who obtained an average annual score of 1 point and retired during 2014-2019**

| Year | Gross average earnings | Pension point value | Correction index according to the law | Annual adjusted score for an individual with 1 pension point | Initial pension | Current pension (indexed with the increase in the pension point) | % initial pension / gross average earnings | Benefi pensior 2019 pensior t |
|---|---|---|---|---|---|---|---|---|
| 2012 | 2063 | 732.8 | | | | | | |
| 2013 | 2163 | 762.1 | | | | | | |
| 2014 | 2328 | 790.7 | 1.07 | 1.07 | 846.05 | 1177 | 41.01% | 1.121 |
| 2015 | 2555 | 830.2 | 1.07 | 1.07 | 888.31 | 1177 | 41.07% | 1.121 |
| 2016 | 2815 | 871.7 | 1.09 | 1.09 | 950.15 | 1199 | 40.81% | 1.100 |
| 2017 1 Jan | 3223 | 917.5 | 1.14 | 1.14 | 1045.95 | 1254 | 40.94% | 1.052 |
| 2017 1 July | 3223 | 1000 | 1.14 | 1.14 | 1140.00 | 1254 | 44.62% | 1.052 |
| 2018 1 Jan | | 1000 | 1.15 | 1.15 | 1150 | 1265 | 40.85% | 1.043 |
| 2018 1 July | | 1100 | 1.15 | 1.15 | 1265 | 1265 | 44.94% | 1.043 |
| 2019 Jan-Aug | | 1100 | 1.2 | 1.2 | 1320 | 1320 | 40.96% | 1 |

*Source: own calculations based on National Institute of Statistics, National House for Pension and Other Social Insurance Rights and National Commission for Strategy and Prognosis data*

Thus, it can be observed that the initial pension represents about 41% of the gross average earnings from 2 years ago regardless of the value of the pension point. It can also be noted that a retired person who earned an average 1 point average has a different pension today, depending on the year of retirement. Thus, someone who retired in 2019 has a pension with about 12.15% higher than a retired in 2014, with 10% higher than someone who retired in 2015 and with 4.35% higher compared with a person who retired a year ago. This issue became evident in July 2017 when the correction index had to become 1.05 as a result of the increase in the pension point, but the Parliament by derogating from the pension law maintained it to the value of 1.14. If he did not do so, the pension of someone who would have retired after July 1st 2017 would have been $1.05 * 1000 = 1050$ similar to the

existing pension before indexing and less than that of a retired pensioner January-June 2017, and whose pension was indexed on July 1st by 9%. This is because the initial pension is about 41% of the gross average earnings, and the rise in the pension point only affects pensions in payment. Those who retired more recently benefit from the fact that wages grew faster than the pension point, which affects the formula. Moreover, the current formula for calculating pensions is not only likely to create distortions, but they have the potential to increase over time as shown by the increasing gap between the benefit received by an individual who retired in 2019 and one who retired earlier. The bigger the gap between the wage dynamics and the pension point, the greater will become the differences between pensioners with the same annual score but with a different retirement year. Although the introduction of the correction index did increase all pensions compared to the previous situation, it has done it in a way in which some pensioners have greater advantages and these advantages are not constant in time.

Currently, the Parliament approved a new pension law which is expected to entry into force on September 1st 2021 which changes substantially the formula based on which pensions are determined. The proposed formula is as follows:

$$Pension = Number\ of\ points * Value\ of\ the\ reference\ point$$

Where the number of points is determined by summing all yearly points accumulated during the active life and the value of the reference point is a new variable similar from a conceptual point of view with the current pension point. In fact, the new pension law establishes the value of the reference point as the pension point divided by 25. In essence, compared to the current situation instead of calculating an average annual score by dividing total points to the full contribution period now total points are considered and the reference point now designates a value for an annual point instead for an average point throughout the contribution period. Also, the correction index is being eliminated and the full contribution period is now being reduced to 25 which will generate an advantage for workers with longer contributions periods. The reduction of the full contribution period from 35 years to 25 represents an advantage of about 1.4 in index terms for an individual who worked for 35 years but this advantage is diminished by

the elimination of the correction point currently at a level of 1.2, resulting of a net advantage of 1.17 in index terms or 17%.
In order to compare the consequences of the new formula we will continue the previous example by considering again a pensioner with an average annual score of 1 who worked for a period of 35 years, thus having a total number of points equal to 35. The value of the reference point is given by the current value of the pension point of 1100 divided by 25, respectively 44 RON. In the next table, we determined the pension of a pensioner who retired during 2014-2019 and the increase compared to the current situation needed in order to ensure the convergence.

**Table 2**

**Value of pension according to the new formula**

| Year of retirement | Current pension | Pension according to the new formula | Increase in pension |
|---|---|---|---|
| **2014** | 1177 | 1540 | 30.84% |
| **2015** | 1177 | 1540 | 30.84% |
| **2016** | 1199 | 1540 | 28.44% |
| **2017** | 1254 | 1540 | 22.81% |
| **2018** | 1265 | 1540 | 21.74% |
| **2019** | 1320 | 1540 | 16.67% |

*Source: own calculations based on National House for Pension and Other Social Insurance Rights data*

It can be observed that now a pensioner with an equal number of total points will now receive the same benefits irrespective of the year in which he retires. Thus, this formula has the advantage of being more efficient not suffering from the vices of the current one which were described above. Moreover, as the new formula will be applied also to current pensioners, following a process of pension recalculation, the current inequities will be eliminated.

The new formula, although it solves largely of the problems generated by the current one has also some costs. Compared to the current situation the pensions will be higher, with percentages varying from 0% to 31%, the pensioners disadvantaged by the current formula receiving higher increases, generating significant budgetary costs.

Although the examples considered in the table may suggest that all pensioners will benefit from increased benefits, it is not the case for individuals with lower contributions periods than 25 years whose pensions will not change. It has to be mentioned that older pensioners which retired in a period when the retirement age was smaller will now be disadvantaged compared to individuals which retired more recently when retirement age and the full contribution period are set at a higher level. But it can be argued that individuals, who worked for longer periods of time, even if that was generated by the legislation governing pensions, are also entitled to higher benefits.

## 5. Concluding remarks

The current formula for determining pension benefits in Romania is inefficient and generates inequities between pensioners with the same level of contributions depending on the year of retirement. Moreover, these differences are significant and have the potential to increase in time if wages are growing faster than pensions. This situation was generated by the introduction of the correction index in 2013 which broke the link between the initial pension and the value of the pension point, with the initial pension benefit being *de facto* linked with the average wage at the level of the economy registered 2 years before retirement. Although, the introduction of the correction index did benefit all pensioners, it has also generated the inequities described above. The new pension law, which is envisaged to entry into force on September 1st 2021, also contains a new formula, which from a conceptual point of view will solve future inequities and also the ones created by the current formula. This will help the pension system in Romania to fill the gap between current and best practices in this field. However, the new formula comes with a budgetary cost with all pensions set be higher, with a percentage varying from 0% to 31%, the pensioners disadvantaged by the current formula receiving higher increases. The Government has to deal with the challenge of balancing the costs generated by the change of the formula and the objective of increasing the value of the pension point, while dealing with the sustainability of public finances.

**References**

1. Barr, N. & Diamond, P. (2006). The Economics of Pensions. Oxford Review of Economic Policy, 22 (1): 15-39.
2. Banks, J. et al. (2005). Prepared for Retirement? The Adequacy and Distribution of Retirement Resources in England. London: Institute for Fiscal Studies.
3. Chybalski, F. (2012). Measuring the multidimensional adequacy of pension systems in European countries. Discussion Paper PI-1204, March 2012. The Pension Institute, London.
4. Chybalski F. (2015). The Multidimensional Efficiency of Pension System: Definition and Measurement in Cross-Country Studies. Social Indicator Research.
5. European Commission (2018). The Ageing Report: Economic and budgetary projections for the 28 EU Member States (2016-2070). Available online: https://ec.europa.eu/info/sites/info/files/economy-finance/ip079_en.pdf
6. Holub, M. (2010). The Assessment of the Pension Base Calculation. Prague: Research Institute for Labour and Social Affairs
7. Holzmann, R. & Hinz, R. (2005). Old-Age Income Support in the 21st Century: An International Perspective on Pension Systems and Reform. Washington D.C.: World Bank.
8. Holzmann, R. & Guven, U. (2009). Adequacy of Retirement Income After Pension Reforms in Central, Eastern and Southern Europe: Eight Country Studies. Washington, D.C.: World Bank.
9. OECD. (2005a). Comparing Pension-system Parameters, in OECD Pensions at a Glance 2005: Public Policies Across OECD Countries. Paris: OECD Publishing.
10. OECD. (2015a). Pensions at a Glance 2015: OECD and G20 Indicators. Paris: OECD Publishing.

11. Queisser, M. & Whitehouse, E. (2005). Pensions at a Glance: Public Polices Across OECD Countries. MPRA Paper No. 10907. Paris: OECD Publishing.
12. Schwan, A. & Sail, E. (2013). Assessing the Economic and Budgetary Impact of Linking Retirement Ages and Pension Benefits to Increases in Longevity. European Economy - Economic Papers 512. Brussels: European Commission.
13. World Bank. (1994). Averting the Old Age Crisis: Policies to Protect the Old and Promote Growth. World Bank Policy Research Report. Washington, D.C.: Oxford University Press.