# A Complex Study of the Romanian Pension System

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# A COMPLEX STUDY OF THE ROMANIAN PENSION SYSTEM

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Abstract

The pension system in Romania is currently in the process of identifying methods and models that meet the requirements imposed by the disappearance of barriers in the flow of goods, capital and service mobility. Taking this into consideration, solutions to a more complex study of the Romanian pension system must be found.

In order to engage in a complex study of the Romanian pension system, one must begin with the analysis of the grand total of the pension that depends on a series of factors: the annual medium income of the employer, which changes for obvious reasons every year, the average income of the insured individual compared to the economy levels, the number of years of employment that constitute the compulsory length of service, the type of activity in question, the advantages that constitute flexibility, the level of economic development at the date of retirement. An original approach to the issue of calculating the pension is found in [1, p. 33]. By developing the original formula, we will attribute $x_t, \overline{x_t}$ to the medium income of the employer, either at the level of national economy or of a particular branch, $t = 1, 2, ..., T$, where $T$ equals the number o years necessary to achieve the complete length of service and contribution. By using $\frac{x_t}{\overline{x_t}}$ we will obtain the quota connected to the employer's income compared to the average economy level in the year $t$, $t = 1, 2, ..., T$. For different employers, in different years this rapport will also be different, bigger or smaller than 1. We will name these "parts" points. In the $(0, T)$ period the employer will have totally accumulated $\frac{x_1}{\overline{x_1}} + \frac{x_2}{\overline{x_2}} + ... + \frac{x_t}{\overline{x_t}} + ... + \frac{x_T}{\overline{x_T}} = \sum_{t=1}^{T} \frac{x_t}{\overline{x_t}}$ points, the arithmetical mean being:

$$\frac{1}{T}\left(\sum_{t=1}^{T} \frac{x_t}{\overline{x_t}}\right) \text{ points.}$$

The access to pension is the vector $(\overline{A})$. Retiring, the insured individual may invoke the right as successor, depending on a degree of disability etc. That is $\overline{A} = (A_1, A_2, ..., A_i, ..., A_\alpha)$.

Therefore, depending on the nature of the activity, its importance to society, the danger the insured individual is susceptible to etc., the pension can be enhanced on the basis of the flexibility of pension law. The flexibility of pension is also a vector $E = (E_1, E_2, ..., E_j, ..., E_\beta)$.

In order to introduce all possible variants concerning "access to pension", "the flexibility of pension" in the calculation, we will elaborate the multiplying coefficients matrix $\gamma_{ij} = A_i \cdot E_j, \quad i = 1, 2, ..., \alpha; \quad j = 1, 2, ..., \beta$ /Table 1/.

*Table 1.*

**The multiplying coefficients matrix**

| Flexibility / Access | $E_1$ | $E_2$ | ... | $E_j$ | ... | $E_\beta$ |
|---|---|---|---|---|---|---|
| $A_1$ | $\gamma_{11}$ | $\gamma_{12}$ | ... | $\gamma_{1j}$ | ... | $\gamma_{1\beta}$ |
| $A_2$ | $\gamma_{21}$ | $\gamma_{22}$ | ... | $\gamma_{2j}$ | ... | $\gamma_{2\beta}$ |
| ⋮ | ⋮ | ⋮ | ... | ⋮ | ... | ⋮ |
| $A_i$ | $\gamma_{i1}$ | $\gamma_{i2}$ | ... | $\gamma_{ij}$ | ... | $\gamma_{i\beta}$ |
| ⋮ | ⋮ | ⋮ | ... | ⋮ | ... | ⋮ |
| $A_\alpha$ | $\gamma_{\alpha 1}$ | $\gamma_{\alpha 2}$ | ... | $\gamma_{\alpha j}$ | ... | $\gamma_{\alpha\beta}$ |

Consequently, the employers, through the coefficients $\gamma_{ij}, \quad i=1,2,...,\alpha; \quad j=1,2,...,\beta$, will be disfavored according to the number of points, accumulated during the insurance period in the $(0;T)$ interval. The pension by points can be expressed:

$$P_{ij}=\frac{\gamma_{ij}}{T}\left(\sum_{t=1}^{T}\frac{x_t}{\overline{x_t}}\right) \text{ points.}$$

One point, represented in value, in the year of retirement is estimated at $V\frac{lei}{punct}$. So, the pension in Romanian lei will constitute:

$$P_{ij}=\frac{\gamma_{ij}\cdot V}{T}\left(\sum_{t=1}^{T}\frac{x_t}{\overline{x_t}}\right) \text{ lei.}$$

Calculating pension in this manner has a number of arguments: the whole interval of the employer's activity is taken into consideration; the employer's income, the annual medium income at the level of national economy; this way, the periods of economic crisis in the country, the inflation of said years does not influence the interests of the future pensioners; a certain social equity is established by attributing a single value to a pension point. On the other hand, the weak aspects of this system concern the $\gamma_{ij}, \quad i=1,2,...,\alpha; \quad j=1,2,...,\beta$ coefficients, which are constant in time. In our opinion, both the multiplying coefficients and the value of the points must evolve in time and be replaced by:

$$\gamma_{ij}^{(t)}, \quad i=1,2,...,\alpha; \quad j=1,2,...,\beta; \quad t=1,2,...,T$$

$$V^{(t)}, \quad t=1,2,...,T$$

The "Access" (A) and "Flexibility" (E) coefficients can and must be used by the authorities as "stimulant regulators" /fig. 1./.

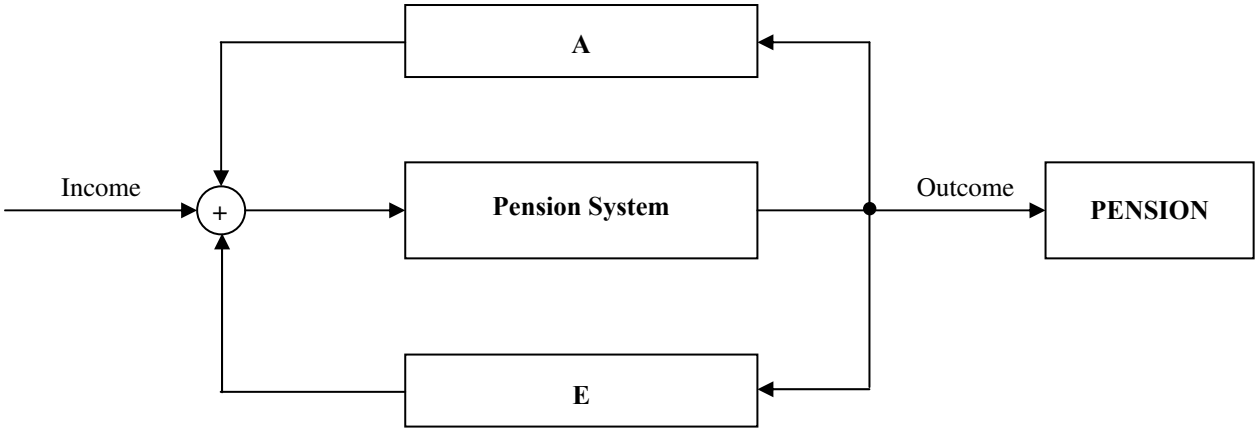


**Fig. 1. The block-sketch A - E**

In their quality as "regulators" in the pension system, dubbed a regulated system, serve: the government authorities that establish the value $V^{(t)}$ of one pension point; the employer with vectors A and E.

The pension rendered by value can be calculated using this formula:

$$P_{ij}^{(t)} = \frac{\gamma_{ij}^{(t)} \cdot V^{(t)}}{T} \cdot tgQ_t$$

where the $Q_t$ angle constitutes the descent of the $x_t = f\left(\bar{x}_t\right)$ function/fig. 2./.

$\frac{x_t}{\bar{x}_t} = P_t$ - the points achieved by the employer in the year *t*. $x_t = P_t \cdot \bar{x}_t$.

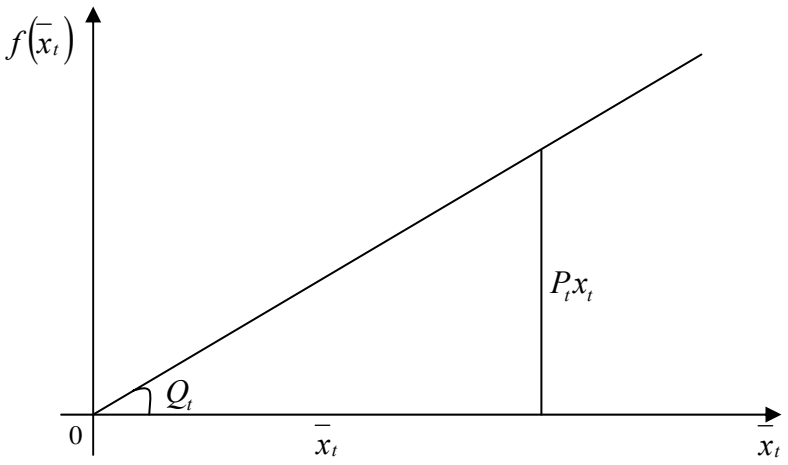


**Fig. 2. The graphic interpretation of points in the year *t***

The increase or decrease of the $Q_t$ angle depends on the employer's efforts to earn more through work $\left(\Delta x_t\right)$, on the government authorities that can, if the level of economic development permits it, to enhance the value of the pension point, on the efforts of the employer to take advantage of the *A* coefficient to increase the $Q_t$ angle by $\Delta Q_t^{(A)}$, on the *E* coefficient for the increase of $\Delta Q_t^{(E)}$, on the level of national economic development that can

increase the $\bar{x}_t$ mean by $\Delta\bar{x}_t$. The increase of the value of the pension point is a consequence of the increase of the GDP, and also of the increase of $\bar{x}_t$. Therefore, the level of the pension can increase, remain constant or even decrease. /fig. 3/.

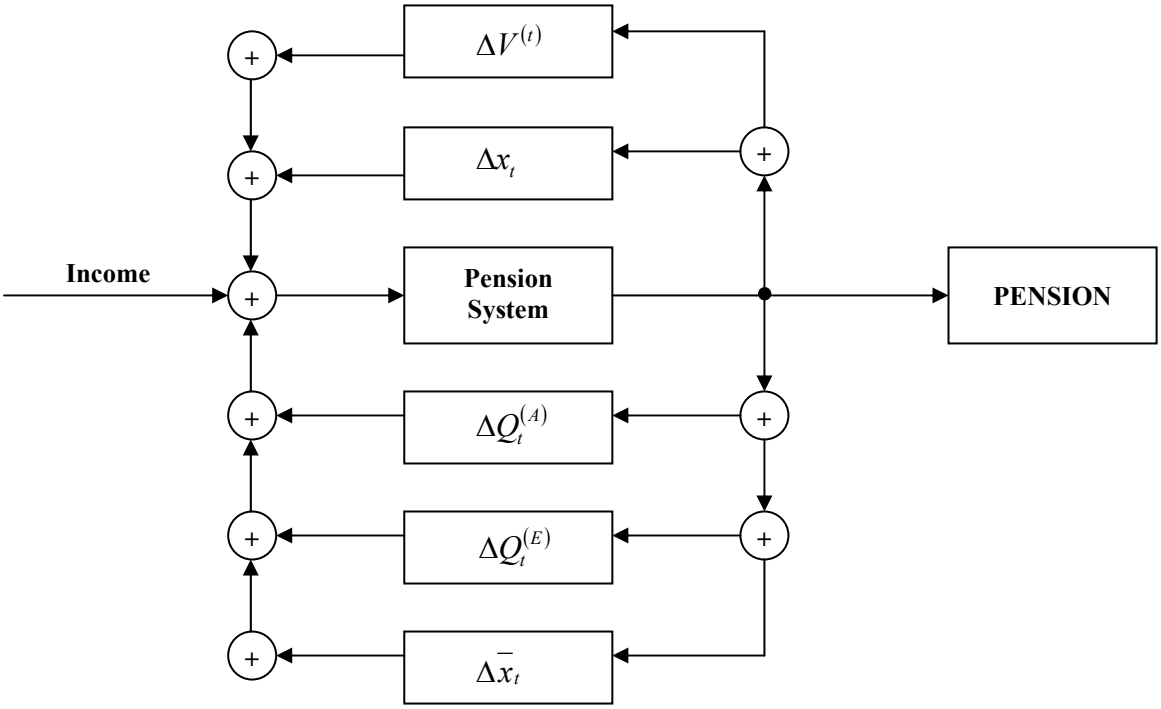


**Fig. 3. The "PENSION" regulating system**

## Resources

1. The European Institute of Romania, The Romanian pension insurance system during transition : major problems and solutions, Bucharest, 2004 (*Institutul European din România, Sistemul de asigurări de pensii în România în perioada de tranziţie: probleme majore şi soluţii, Bucureşti, 2004.)*