

The Financial Supervisory Authority

Rule no. 26/2015 on the actuarial calculation of technical provisions for voluntary pension funds

*In force starting January 11, 2016
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There are no changes until January 15, 2018 .*

*Considering the provisions of art. 102 par. (5) **letter b**) and art. 115 **par. (2) - (5)** of Law no. 204/2006 on voluntary pensions, as subsequently amended and supplemented,
based on the provisions of art. 2 par. (1) **letters c**) and **d**) , art. 3 par. (1) **letter b**) , art. 5 **letter c**) , art. 6 **par. (1) and (2)** , art. 7 **par. (2)** and **art. 28** of the Emergency Government Ordinance no. 93/2012 on the establishment , organization and operation of the Financial Supervisory Authority approved with amendments by Law **no. 113/2013** , as amended and supplemented,
under the provisions of Art. 24 **letter l**) of the Emergency Government Ordinance no. 50/2005 on the establishment , organization and operation of the Private Pension System Supervisory Commission, approved with amendments and completions by Law **no. 313/2005** , as subsequently amended and supplemented,
following the deliberations of the Financial Supervisory Authority Board during the meeting held
on December 16, 2015,*

The Financial Supervisory Authority issues this rule.

CHAPTER I

General provisions

Article 1. - This rule establishes the rules for calculating, checking, establishing, investing and using the technical provision for voluntary pension funds.

Art. 2. - **(1)** The provisions of this rule shall apply to managers of voluntary pension funds providing guarantees in the prospectus of the voluntary pension scheme, hereinafter referred to as managers.

(2) The managers provided in paragraph (1) are obliged to establish technical provisions corresponding to the risks arising from the adoption, by the prospectus of the voluntary pension scheme, of the financial guarantees allowed by Law **no. 204/2006** on voluntary pensions, as subsequently amended and supplemented, hereinafter referred to as the Law.

Art. 3. - **(1)** The terms and expressions used in this Rule shall have the meaning provided by:

a) art. 2 of the Law;

b) art. 2 **par. (2)** of Rule no. 11/2011 regarding the investment and evaluation of the assets of the private pension funds, approved by the Decision of the Private Pension System Supervisory Commission **no. 22/2011** , as amended and supplemented.

(2) Also, the terms below shall have the following meanings :

a) assets corresponding to the technical provisions - the financial assets required to establish the technical provision;

- b)** benefit - guaranteed value in the form of an absolute amount established in the prospectus of the pension scheme;
- c)** the guarantees are:
 - (i)** measures to protect against biometric risks by guaranteeing a minimum level of benefit at the time of the possible materialization of the biometric risk concerned;
 - (ii)** the established minimum level of the benefit at the time of retirement for old age;
 - (iii)** guaranteeing the performance investment;
- d)** internal model – a mathematical model for calculating the technical provision, completely different from the standard model, made according to the legal provisions in force, used by the manager to calculate the technical provision;
- e)** partial internal model – a mathematical model for calculating technical provisions which amend or supplement certain aspects of the standard model, made under the law in force, used by the manager to calculate technical provisions;
- f)** standard model - the mathematical model for calculating the technical provision described in this rule;
- g)** maximum rating - the AAA rating given by Fitch and Standard & Poor's and the Aaa rating given by Moody to a financial instrument issue or to the issuer as a result of the risk assessment associated with it;
- h)** the guaranteed amount - the amount of the financial guarantee allowed by the Law and assumed by the manager through the prospectus of the pension scheme.

CHAPTER II

Technical Provision

SECTION 1

General rules

Art. 4. - The technical provision is established in order to cover the risks associated with the guarantee allowed by the Law and undertaken by managers through the prospectus of the pension scheme.

Art. 5. - (1) If the value of the participant's personal asset is less than the amount guaranteed by the pension scheme prospectus, the manager shall increase the value of the participant's personal asset to the value of the guaranteed amount.

(2) The increase in the value of the participant's personal asset referred to in paragraph (1) shall be made at the time of payment of the personal asset.

(3) The provisions of paragraph (1) shall also apply to the amendment, suspension or termination of pension fund contributions.

(4) The difference necessary to increase the value of the participant's personal asset to the value of the guaranteed amount is covered by the technical provision set up by the manager.

(5) In case of the transfer of the participant, in the situation stipulated in par. (1), the transfer of the amount from the technical provision shall be made to the transfer account of the new voluntary pension fund on behalf of the transferred participant on the same day as the transfer of the personal asset of that participant.

Art. 6. - The financial assets required for the establishment of the technical provision come from the manager's own financial resources.

SECTION 2

Assets corresponding to technical provision

Art. 7. - (1) The value of the assets corresponding to technical provisions shall be at least equal to the amount resulting from the most recent calculation of the technical provision for the voluntary pension fund.

(2) The assets corresponding to technical provisions are shown separately in the accounts of managers, according to the accounting regulations in force.

Article 8. - The investment of assets corresponding to the technical provision is made according to the nature and duration of expected future payments in the following classes of financial instruments:

- a)** securities issued by central public administration authorities in Romania;
- b)** securities listed with a maximum rating by at least two rating agencies, issued by central public administration authorities of Member States of the European Union or belonging to the European Economic Area, the United States of America, Canada, Japan;
- c)** bonds issued by the World Bank, the European Bank for Reconstruction and Development, the European Investment Bank ;
- d)** accounts, deposits and certificates of deposit with a credit institution , a Romanian legal person, or with a foreign credit institution which is not subject to special surveillance or special administration procedure or whose authorization is not withdrawn.

Art. 9. - (1) The storage of assets representing technical provision takes place under a contract between the manager and the depository of the pension fund, which has a minimum similar to the storage contract concluded for pension fund assets.

(2) The activity of custody of the assets corresponding to the technical provisions shall be performed on the basis of a contract concluded between the manager and the depository of the voluntary pension fund, which has a content minimum similar to that of the custody contract concluded for the assets of the voluntary pension fund.

(3) The costs for the depository and custody of assets representing technical provision shall be borne by the manager.

(4) The depository and custody of assets representing technical provisions shall be carried out in compliance with the provisions of ASF's Rule [no. 10/2014](#) on the Depository and Custody Activity of the Voluntary Pension Funds' Assets

(5) The valuation of the assets corresponding to the technical provisions shall be made by the manager and the depository on the basis of the valuation rules provided by Rule [no. 11/2011](#) on the investment and evaluation of the assets of the private pension funds, approved by the Decision of the Private Pension System Supervisory Commission [no. 22/2011](#) , as amended and supplemented.

Art. 10. - (1) The manager or the special manager may carry out operations in the sense of establishing, increasing or diminishing the value of the account in which the assets corresponding to the technical provisions are evidenced in the following situations :

- a)** establishing, increasing or diminishing the value of the account after calculating the technical provision, in order to achieve the equivalence between the value resulting from the most recent calculation and the amount of the account;
- b)** the increase or decrease of the value of the account following the fluctuations in the value of the assets corresponding to the technical provision, in order to achieve equivalence between the value resulting from the most recent calculation and the value of the account;
- c)** completion up to the guaranteed amount of the cash equivalent of the personal assets of the participants in the respective fund;

d) the increase in the value of the account after the payments referred to in letter c) to achieve equivalence between the value resulting from the most recent calculation of the technical provision and the amount of the account;

e) supplementing the assets of the voluntary pension fund according to the provisions of Rule no. 8/2009 on the special administration of voluntary pension funds, approved by the Decision of the Private Pension System Supervisory Commission no. 9/2009 , in the event of the introduction of the special management measure for that fund.

(2) Operations, meaning an increase or decrease of the value of the account which highlights the assets corresponding to the technical provision other than those referred to in paragraph (1) shall be carried out only with the prior approval of the Financial Supervisory Authority, hereinafter referred to as the Authority.

SECTION 3

Establishing and calculating the technical provision

Art. 11. - (1) The manager shall establish the technical provision based on the value resulted from the most recent calculation, performed according to the standard model described in this rule or based on an internal or partial internal model .

(2) The manager has the obligation to notify the Authority about the elaboration and use of the internal or partial internal model and to submit all its specifications at least 3 months before using it for calculating the technical provision.

(3) The manager has the obligation to establish the technical provision or increase its value, within a maximum of 10 working days from the calculation date.

(4) The calculation of the technical provisions shall be made and certified by an actuary.

(5) The actuary in contractual relations with a manager and appointed by the latter shall have the obligation to calculate and certify the amount of the technical provision.

(6) The calculated amount of the technical provision shall be submitted to the Authority in the form of an actuarial report within a maximum of 10 working days from the calculation.

Art. 12. - (1) The minimum level of the technical provision that the manager has to hold is the one resulting from the most recent provisioning calculation made by the Authority.

(2) The actual level of the technical provision that the manager has to hold is the maximum of the value calculated by the Authority and that resulting from the internal or partially internal model.

(3) Depending on the evolution of the risks involved, the Authority may amend the standard model, with prior notice to the manager at least three months prior to the Authority's technical provision calculation.

(4) The Authority may allow the manager to establish the technical provision calculated according to the internal or partial internal model, with a value lower than the value obtained according to the standard model, if the differences between the two calculations are reasonable and the manager proves accurate and adequate calculations, carried out in accordance with the principles set out in this rule.

Art. 13. - (1) The calculation of technical provisions shall be made annually in the first month of the current year using the existing data record, registered by the end of the last month of the previous year.

(2) Depending on the evolution of the risks involved, the Authority may at any time request the recalculation of the value of technical provisions.

(3) The manager may make the calculation of the technical provision whenever it deems necessary to review it, by using the existing data record registered up to the end of the month preceding the date of the calculation.

(4) The actuary designated by the manager carries out the calculation according to the provisions of the Law in accordance with the standard model established by this rule or according to the internal model or partially internal model .

Art. 14. - (1) The Authority shall verify the amount of the technical provisions, calculated and reported by the manager, by using the standard model set out in this rule.

(2) For the calculation of cash flows, the standard model shall comply with the following:

a) the discount rates used are the spot curve rates of government bond yields listed as AAA, published by the European Central Bank ("AAA government yield curve ", <http://www.ecb.int/stats/money/yc/html/index.en.html>);

b) to determine the future value of the guarantee provided under art. 3 par. (2) letter c) point (iii) the calculation formula shall use the average value of the updated historical positive contributions deposited by the participant in the last 12 months. This average will be updated annually during the projection, according to the participant salary increase, net of inflation;

c) the determination of the actual history amount of the personal assets of the participant [$S_{(0)}$] is done by multiplying the fund unit at the time of conversion of the most recent contribution received up to the time of the actual calculation including the number of fund units of the participant from the same date as the value of the fund unit considered above;

d) the determination of the future actual values of the participant's personal asset [$S^a_{(t)}$] is performed using a binomial tree structure of k (Cox, Ross, & Rubinstein Option-Pricing Model – binominal tree), where k is the number of months between the time of the calculation and the date when the participant reaches the retirement age according to the Law. The extremes of variation of the values of each branch of a node fall within the limits of the monthly variation coefficient (C_L). The minimum and maximum values of the participant's personal asset on a node are determined. At the end of each projection year, the value of the option is determined in each of the two extreme points of each node. The average value of the option for that node is the geometric mean between the minimum and maximum value of the option on that node. The null values of the option are excluded from the average calculation per node;

e) future expense amounts with audit tax and future contributions of the participant shall be updated during projection, with the most recent estimate of the average rate of inflation Harmonized Index of Consumer Prices - HICP, published by the European Central Bank (Overall HICP inflation rate - Average - <http://www.ecb.europa.eu/stats/prices/hicp/html/inflation.en.html>);

f) for calculating the future effective value of the personal asset and the future value of the investment guarantee costs, in the calculation formula are considered the expenses under the fund according to the pension scheme prospectus valid at the time of calculation;

g) to calculate the historical value of the investment guarantee in the calculation formula are considered the expenses charged to the fund according to the prospectus/prospectuses valid for the historical period considered in the calculation.

(3) The biometric tables used for the calculation of the technical provisions shall be based on the latest data published by the National Institute of Statistics and/or data provided by sources indicated by the Authority taking into account the gender specificity, the main characteristics of the group of participants and expected evolution of the relevant risks.

(4) The probabilities used in the calculation are taken into account up to the 6th decimal place.

Art. 15. - (1) If the manager uses an internal or partial internal model , he/she must use stochastic simulation for future cash flow projections, a confidence interval of at least 95% (both parties) and adhere to the principles stated in art. 14 par. (2) letters a) , b) , c) , e) , f) , g) , para. (3) and (4) .

(2) For internal or partial internal models using investment return scenarios, the projection of future cash flows is based on at least 10,000 different yield scenarios.

Art. 16. - (1) According to the standard model, the technical provision is calculated as the sum of all individual reserves, calculated for each individual participant:

$$PT = \sum_{i=1}^N R_{(i)},$$

where:

PT = technical provision at the time of calculation;

$R_{(i)}$ = the individual reserve of the participant at the time of the calculation;

N = the total number of participants in the voluntary pension fund.

(2) The individual reserve of the participant shall be calculated as the sum of all cash flows arising from the occurrence of events of death, invalidity, transfer and retirement for old age (maturity):

$$R_{(i)} = \sum_{t=1}^T CFD_{(t)} + \sum_{t=1}^T CFS_{(t)} + \sum_{t=1}^T CFI_{(t)} + CFM_{(T)},$$

where:

$R_{(i)}$ = individual reserve of the participant i;

$CFD_{(t)}$ = death cash flow at the end of year t;

$CFS_{(t)}$ = transfer cash flow at the end of year t;

$CFI_{(t)}$ = disability cash flow at the end of year t;

$CFM_{(T)}$ = maturity cash flow in year T;

t = projection forward year for the relevant cash flow;

T = the final year of reaching the retirement age.

a) The death cash flow at the end of year t is calculated as follows:

$$CFD_{(t)} = {}_{t-1}P_x \cdot {}_1q_{x+t-1} \cdot {}_tP_x^i \cdot {}_tP_0^s \cdot CF_{(t)}$$

b) The transfer cash flow at the end of year t is calculated as follows:

$$CFS_{(t)} = {}_tP_x \cdot {}_tP_x^i \cdot {}_{t-1}P_0^s \cdot {}_tq_{t-1}^s \cdot CF_{(t)}$$

c) The disability cash flow at the end of year t is calculated as follows:

$$CFI_{(t)} = {}_tP_x \cdot {}_{t-1}P_x^i \cdot {}_1q_{x+t-1}^i \cdot {}_tP_0^s \cdot CF_{(t)}$$

d) The maturity cash flow in year T, the year of retirement age, is calculated as follows:

$$CFM_{(T)} = {}_T P_x * {}_T P_0^s * {}_T P_x^i * CF_{(T)},$$

where:

$CF_{(t)}$ = absolute cash flow at the end of year t;

${}_{t-1}P_x$ = the probability of the participant aged x to survive for at least t-1 years;

${}_1q_{x+t-1}$ = the probability of the participant aged x + t-1 die in the time interval (x + t-1, x + t);

${}_t p^s_0$ = the probability that the participant will remain in the pension scheme at least until year t;

${}_t p_x$ = the probability that the participant aged x will survive for at least t years;

${}_t q^s_{t-1}$ = the probability that the participant renounces the pension scheme in year t after contributing t-1 years;

${}_T p_x$ = the probability that the participant aged x will survive at least until the T year;

${}_T p^s_0$ = the probability that the participant will remain in the pension scheme until the year T;

$Q_1^{\text{and}}_{x+t-1}$ = the probability that the participant aged x + t-1 will withdraw from the retirement scheme due to disability in the time interval (x + t-1, x + t);

${}_t p^i_x$ = the probability that the participant aged x will not become invalid for at least t years;

${}_T p^i_x$ = the probability that the participant aged x will not become invalid until year T;

x = age in years of the participant at the time of assessment of technical provisions.

Art. 17. - (1) The determination of absolute cash flows is made by calculating the average value of the option at the end of each calendar year of the individual projection horizon until the termination time T for retirement for each of the end-of-year nodes, as follows:

$$CF_{(t)} = \sum_{\alpha=1}^{n_{(t)}} P_{\alpha}^t * \text{Valoare_medie_optiune}_{\alpha}^t$$

$$P_{\alpha}^t = p^{(n_{(t)}-\alpha)} * q^{(\alpha-1)} * C_{(n_{(t)}-1)}^{(\alpha-1)} \quad \alpha = \overline{1, n_{(t)}}$$

$$p = \frac{e^{0.7r_f} - e^{-\sigma_L}}{e^{\sigma_L} - e^{-\sigma_L}}$$

where:

$CF_{(t)}$ = absolute cash flow at the end of year t;

Valoare_medie_optiune $_{\alpha}$ = Average option value at end of year t in node α ;

$n_{(t)}$ = number of nodes, corresponding to the end of year t;

α = the number of the respective node corresponding to the end of year t;

P_{α}^t = probability of occurrence associated with the scenario of the node α at the end of year t;

p = probability of upward movement;

q = probability of downward movement;

r_f = the monthly yield of the spot curve provided in art. 14 par. (2) [letter a](#) , related to the 10-year maturity ;

σ_L = the standard deviation of the monthly historical effective rates of return;

$C_{(n_{(t)}-1)}^{(\alpha-1)}$ = combinations of $n_{(t)}$ -taken at $\alpha-1$.

(2) The determination of the average value of the option per end-of-year node is made according to art. 14 par. (2) [letter d](#) .

(3) Determination of the option value is made for the minimum and maximum value of the personal asset on the respective projected end-of-year node as follows:

$$Valoare_optiune_{\alpha}^t = \begin{cases} \max\{G_{(t)} + \max\{B_{(t)} - G_{(t)}; 0\} - S_{(t)}^{\alpha}; 0\}, & \text{daca } \beta > 0 \\ \max\{G_{(t)} - S_{(t)}^{\alpha}; 0\}, & \text{daca } \beta = 0 \end{cases}$$

where:

Valoare_optiune_α^t = the option value at the of the year t, in node α;

S_(t)^α = the effective future value of the personal assets at the end of year t in node α;

G_(t) = the future value of the personal assets at the end of year t;

B_(t) = the value of the guaranteed benefit at the end of year t;

β = guaranteed benefit (minimum amount of the personal asset, in absolute amount).

(4) The future guaranteed value of the strike price for year t is calculated as follows:

$$G_{(t)} = e^{-r_d(t) \cdot t} [G_{(0)} \prod_{h=y}^m e^{r_g(h)} e^{-r_c(h)} + \sum_{h=y}^m C_{(h)} (1 - e_{(h)}) \prod_{j=h}^m e^{r_g(j)} e^{-r_c(j)}]$$

The historical value of the guarantee is calculated as follows:

$$G_{(0)} = \sum_{h=0}^{y-1} C_{(h)} (1 - e_{(h)}) \prod_{j=h}^{y-1} e^{r_g(j)} e^{-r_c(j)},$$

where:

G_(t) = the future guaranteed value of the personal assets at the end of year t;

G₍₀₎ = historical collateral value of the guarantee at time of calculation;

r_g = the guaranteed monthly interest rate;

r_d = the discount rate;

r_c = the rate of the monthly administration fees of the fund's assets;

C_(h) = the monthly gross contribution ;

e_(h) = the amount of the administration fee charged from the contribution ;

m = the number of months between the first projection month and end of year t (closed range);

t = the projection forward year for the relevant cash flow;

y-1 = the number of months between the conversion date of the first contributor 's contribution and the month of the calculation;

y = the number of months between the conversion date of the first contribution of the participant and the month of the calculation plus one.

(5) The future effective value of the spot price for the end of year t shall be calculated for each node of the last month of year t as follows:

$$S_{(t)}^{\alpha} = e^{-r_d(t)*t} [S_{(0)} \prod_{h=y}^m e^{C_L(h)} e^{-r_c(h)} + \sum_{h=y}^m C_{(h)} (1 - e_{(h)}) \prod_{j=h}^m e^{C_L(j)} e^{-r_c(j)} - E_{(h)}]$$

a) The effective historical value of the personal asset is calculated as follows:

$$S_{(0)} = vuan_{(y-1)} * nr_uf_{(y-1)}$$

b) The Monthly Variation Coefficient (C_L) follows the pattern below in each monthly node to determine the future effective value of the personal asset at the end of year t in node α :

$$C_L = \begin{cases} + f_{(h-1)} \sigma_L, & \text{pe ramura superioara a unui nod} \\ - f_{(h-1)} \sigma_L, & \text{pe ramura inferioara a unui nod} \end{cases},$$

where:

$S_{(t)}^{\alpha}$ = the effective future value of the personal assets at the end of year t in node α ;

$S_{(0)}$ = actual historical value of the personal asset at the time of calculation;

$C_L(h)$ = coefficient of variation per month;

$f_{(h-1)}$ = the corresponding value for h-1 degrees of freedom of distribution t (Student) for a confidence interval of 95% (both parties);

h = the number of monthly historical effective return rates considered in the standard deviation calculation;

σ_L = the standard deviation of the monthly historical effective rates of return;

r_d = discount rate;

r_c = the rate of the monthly administration fees of the fund's assets;

$C_{(h)}$ = monthly gross contribution;

$e_{(h)}$ = the amount of the administration fee charged from the contribution ;

$E_{(h)}$ = monthly audit fee;

$vuan_{(y-1)}$ = the value of the fund unit at the date of the last contribution conversion ;

$nr_uf_{(y-1)}$ = the number of fund units of the participant at the date of the last contribution conversion;

m = the number of months between the first month of projection and end of year t (closed range);

t = projection forward year for the relevant cash flow;

y-1 = the number of months between the conversion date of the first contribution of the relevant participant and the month of the calculation;

y = the number of months between the conversion date of the first contribution of the relevant participant and the month of the calculation plus one.

(6) The standard deviation of historical monthly effective rates of return (σ_L) is calculated as follows:

$$\sigma_L = \sqrt{\frac{1}{y-1} \sum_{h=1}^{y-1} (r_{e(h)} - \bar{r}_e)^2}$$

$$\bar{r}_e = \frac{1}{y-1} \sum_{h=1}^{y-1} r_{e(h)}$$

The historical monthly effective rate of return is calculated as follows:

$$r_{e(h)} = \ln \left(\frac{vuan_{(h+1)}}{vuan_{(h)}} \right) + r_{c(h)} \quad h = \overline{1, y-1},$$

where:

σ_L = the standard deviation of the monthly historical effective rates of return;

$vuan_{(h)}$ = the value of the fund unit, reported on the last working day of month h;

$vuan_{(h+1)}$ = the value of the fund unit reported on the last working day of month h + 1;

$r_{e(h)}$ = historical effective rate of return for month h;

$r_{c(h)}$ = the rate of the monthly administration fee of the fund asset;

r_e = the arithmetic average of the actual historical profitability rates over the considered range;

$y-1$ = the number of months of the interval until the calculation month.

(7) The value of the guaranteed benefit at time t is calculated as follows:

$$B_{(t)} = e^{-r_d(t)*t} * \beta,$$

where:

$B_{(t)}$ = the value of the guaranteed benefit at time t;

r_d = discount rate;

β = guaranteed benefit (minimum amount of the personal asset, in absolute amount).

(8) The risk-free discount factor for the year t of projection is determined as follows:

$$e^{-r_d(t)*t} = e^{-R(t)*t},$$

where:

r_d = discount rate;

$R(t)$ = spot curve yield provided in art. 14 par. (2) [letter a](#)), related to the maturity of t years;

t = projection forward year, related to the relevant cash flow.

Art. 18. - The periods provided for in this rule, which expire on a public holiday or a non-working day, shall be extended until the end of the next working day.

Art. 19. - Failure to comply with the provisions of this rule constitutes a contravention and shall be sanctioned according to the provisions of art. 38 **letters c) and i)** , art. 120 **par. (1)** and art. 121 **par. (2) to (11)** of the law.

Art. 20. - This rule shall be published in the Official Gazette of Romania, Part I, and shall enter into force on the date of its publication.

Art. 21. - On the date of entry into force of this rule, the Decision of the Private Pensions Supervisory Commission **no. 31/2007** for the approval of Rule **no. 10/2007** on the actuarial calculation of technical provisions, published in the Official Gazette of Romania, Part I, no. 266 of April 20, 2007, as well as any other contrary provisions, shall be repealed.

Chairman of the Financial Supervisory Authority,
Misu Negrițoiu

Bucharest , December 17, 2015.

No. 26.