

Finansinspektionen's Regulatory Code

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Finansinspektionen's regulations regarding technical bases;

FFFS 2007:24

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decided on 12 November 2007.

Finansinspektionen prescribes the following pursuant to section 1 of Ordinance (2007:721) with authorisation for Finansinspektionen to issue regulations regarding technical bases.

Scope

Section 1 These regulations shall apply to the calculation of capital value pursuant to section 3 of the Safeguarding of Pension Commitments, etc. Act (1967:531).

Section 2 The regulations contain provisions on which assumptions are to be used when calculating the capital value with regard to

1. interest rate,
2. yield tax,
3. mortality,
4. morbidity, and
5. contingency and operating expenses.

Definitions

Section 3 In these regulations, *occupational pension insurance* means the same as in Chapter 58, section 7 of the Income Tax Act (1999:1229).

Technical bases

Section 4 The capital value shall be calculated following the technical bases set out in the *appendix*.

Notwithstanding the first paragraph, the capital value may be calculated following such assumptions that are used to calculate premiums for similar benefits within an occupational pension insurance if such a calculation does not result in a value that is lower than the lowest value following from the assumptions in the appendix.

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1. These regulations shall enter into force on 1 January 2008.

2. Notwithstanding point 1, the regulations may be applied to financial years that conclude no later than 31 December 2007.

3. These regulations repeal Försäkringsinspektionen's announcement (BFFS 1977:5) on technical bases that are to be applied when calculating the capital value pursuant to section 3 of the Safeguarding of Pension Commitments, etc. Act (1967:531).

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*Appendix***Technical bases****Interest rate assumptions**

Interest rate assumptions are expressed as an interest rate in per cent before any deductions for yield tax.

Finansinspektionen calculates and adopts the interest rate every year. Information about this interest rate is published on Finansinspektionen's website, fi.se, after the close of the month of September every year.

The calculation of the interest rate that shall be applied to assumptions that do not entail a commitment of future compensation for inflation or index adjustment are based on nominal government bonds.

The calculation of the interest rate that shall be applied to assumptions that entail a commitment of future compensation for inflation or index adjustment are based on indexed bonds and nominal market rates for treasury bonds that have been reduced considering the changes in the Consumer Price Index.

The interest rate is calculated as follows

The basis for calculating the interest rate consists of zero-coupon rates that are calculated at the end of each month. *Zero-coupon rates* refer to long-term market rates for treasury bonds with an add-on for the value of future coupon rates.

The interest rate r constitutes an average of the zero-coupon rates over the past twelve months. The following formula is used for the calculation:

$$r = \frac{\frac{1}{2}r_0 + r_1 + \dots + r_{11} + \frac{1}{2}r_{12}}{12}$$

where r_{12} refers to the zero-coupon rate that applies as at 30 September, and r_j is the corresponding rate at the end of the month $12 - j$ months earlier, where $j = 0, 1, 2, \dots, 11$.

The interest rate is rounded to the nearest tenth of a per cent.

Notwithstanding that set forth above, an employer may apply the interest rate assumption that is used when calculating the premium for a similar benefits within occupational pension insurance if such a calculation does not result in a lower value than the value obtained from the assumption above.

Assumption about deductions for yield tax

If the employer is obligated to pay a yield tax pursuant to the Yield Tax on Pension Funds Act (1990:661), a deduction for the yield tax is applied to the interest rate.

Finansinspektionen calculates and sets the deduction every year; the deduction is announced at fi.se after the end of September every year.

The deduction is calculated as follows

The calculated interest rate for commitments that do not entail a commitment of future compensation for inflation or index adjustment is multiplied by the current tax rate for occupational pension insurance pursuant to the Income Tax Act (1999:1299) and then rounded to the closest tenth of a per cent. The thus calculated charge is then deducted from the interest rate for both assumptions that entail a commitment of future compensation for inflation or index adjustment and assumptions that do not.

If the employer applies the assumption about the interest rate that is used when calculating the premium for a similar benefit within occupational pension insurance, the deduction for the yield tax shall be applied in a similar manner as during such premium calculation.

Assumption about mortality for retirement pension

The mortality intensity μ_x per year at age x is assumed to be given by the following formulas:¹

$$\mu_x = \begin{cases} a + b \cdot e^{cx} & \text{f\"or } x \leq w \\ \mu_w + k \cdot (x - w) & \text{f\"or } x > w \end{cases}$$

where $w = 97$ and $k = 0.003$.

The parameters a , b and c are dependent on the gender and year of birth according to the following tables:

Female

| Year of birth | -1919 | 192y | 193y | 194y | 195y | 196y | 197y | 1980- |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|
| $10^3 a$ | 3.1 | 2.7 | 2.1 | 1.4 | 1.1 | 1.1 | 1.1 | 1.0 |
| $10^6 b$ | 2.058 | 1.374 | 0.977 | 1.129 | 0.879 | 0.411 | 0.129 | 0.092 |
| c | 0.124 | 0.128 | 0.130 | 0.127 | 0.129 | 0.137 | 0.150 | 0.154 |

Male

| Year of birth | -1919 | 192y | 193y | 194y | 195y | 196y | 197y | 1980- |
|---------------|-------|------|------|------|------|------|------|-------|
| $10^3 a$ | 3.4 | 3.4 | 2.5 | 1.7 | 1.5 | 1.3 | 1.1 | 1.0 |

¹ So-called Makeham model with correction in the high age groups. The survival function l_x in this model is given by the following formula:

$$-\log(l_x) = \begin{cases} ax + (b/c) \cdot (e^{cx} - 1) & \text{f\"or } x \leq w \\ -\log(l_w) + \mu_w \cdot (x - w) + (k/2) \cdot (x - w)^2 & \text{f\"or } x > w \end{cases}$$

| | | | | | | | | |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|
| $10^6 b$ | 24.12 | 11.65 | 5.385 | 3.094 | 1.159 | 0.457 | 0.147 | 0.051 |
| c | 0.100 | 0.108 | 0.115 | 0.120 | 0.130 | 0.140 | 0.152 | 0.163 |

where $y = 0, 1, \dots, 9$.

Assumptions for survivor's pension

The capital value of survivor's pension is calculated during the period when the employee receives retirement pension, in cases where there can be a survivor with a right to survivor's pension in the event of death, and as of the date the employee deceased and there is a survivor with a right to survivor's pension.

With regard to survivor's pension, the same assumptions on mortality are applied as for retirement pension.

If the family relationships are known in the specific case, they shall be taken into consideration in the calculation. If the family relationships are not known but there can be a future right to survivor's pension, the age difference between the man and the woman is assumed to be four years, with the man assumed to be older.

The probability $g(x)$ of having adult survivor beneficiaries is assumed to be

$$g(x) = 0,94 \cdot e^{-0,0000009 \cdot (x-54)^4}$$

The beneficiary's marital status is assumed to remain the same after the insured's death.

The capital value of survivor's pension that is not being paid out prior to the period when the employee receives retirement pension is set at 0 (zero).

The assumption is made that surviving children will reach the age of termination, if this is determined.

Assumption about morbidity for disability pension

The assumption is made for an employee with incapacity for employment who is x years old at the beginning of the compensation period for disability pension that the probability of still being entitled to disability pension payments t year later will be

$$[0,53 + 0,1 \cdot f(x)] \cdot 10^{-0,015t} + [0,11 - 0,056 \cdot f(x)] \cdot 10^{-0,4t} + [0,36 - 0,044 \cdot f(x)] \cdot 10^{-2,3t}$$

where

$$f(x) = 42,3 \cdot 10^{0,001x} + 0,000525 \cdot 10^{0,06x} - 48,8$$

The duration t years above refers to the period the employee is still sick after a qualifying period of 90 days.

The actual rate of incapacity for employment in the specific case shall be considered.

If disability pension being paid shall be reduced by simultaneously paid corresponding benefits from the national insurance, the assumption shall be made that these begin to be paid out 15 months after the right to a disability pension has gone into effect.

The capital value for disability pension that is not being paid is set at 0 (zero).

Contingency and operating expense loadings

When calculating the capital value, contingency and operating expense loadings are considered in part through a decrease in the interest rate intensity that corresponds to the assumption of the interest rate after deduction for yield tax and in part through an increase in the capital value, according to the following table:

| | Retirement and survivor's pension | Disability pension |
|---|-----------------------------------|--------------------|
| Decrease in the interest rate intensity | 0.002 | 0.003 |
| Increase in the capital value | 5 % | 10 % |