

Finansinspektionen's Regulatory Code

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Regulations amending Finansinspektionen's regulations and general guidelines (FFFS 2011:39) regarding information about insurance and occupational pensions;

FFFS 2015:18

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decided on 25 November 2015.

Finansinspektionen prescribes¹ pursuant to Chapter 7, sections 2, 5 and 6 of the Insurance Business Ordinance (2011:257) with regard to Finansinspektionen's regulations and general guidelines (FFFS 2011:39) regarding information about insurance and occupational pensions, that Chapter 1, sections 2 and 6, Chapter 2, section 2, Chapter 3, section 1 and Appendices 1–4 shall have the following wording.

Chapter 1

Section 2 These regulations apply to

1. insurance undertakings that provide direct insurance,
2. third-country insurers that conduct direct insurance business in Sweden from general agencies or branches here in the country,
3. pension funds as referred to in section 9a, first paragraph of the Safeguarding of Pension Commitments, etc. Act (1967:531), and
4. foreign institutions for occupational retirement provision as referred to in Chapter 1, section 5, point 3 of the Act (1998:293) on Undertakings of Foreign Insurers and Institutions for Occupational Retirement Provision in Sweden.

A pension fund and a foreign institution for occupational retirement provision shall apply only Chapter 2, section 2 and *Appendix 1*.

For sickness and accident insurance provided as a supplement to a life insurance, *Appendix 2* is not be applied.

Section 6 In these regulations and general guidelines, the following definitions apply:

allocated bonus: a bonus that is preliminarily distributed,

¹ Cf. Directive 2009/138/EC of the of the European Parliament and of the Council of 25 November 2009 on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II) (OJ L 335, 17.12.2009, p. 1, Celex 32009L0138).

inheritance profit: pension income or insurance capital due to the decease of an insured with an insurance that does not have full repayment cover or other survivor benefits which therefore go to other similar contracts,

depository insurance: traditional insurance that normally does not have guaranteed insurance amounts and for which the policyholder or the insured decides the saving profile by selecting one or more of the investment options offered by the insurance undertaking,

party entitled to payment: a party entitled to payment as a result of the insurance, e.g. a policyholder, the insured or members and beneficiaries,

transfer of an insurance's value: given certain conditions, transfer of insurance capital to another contract, from one insurance undertaking to another or from one type of management to another,

paid-up policies: occupational pension insurance or private pension insurance where the agreed premium payments were prematurely terminated and the future pension is based on the premiums already paid,

guaranteed bonuses: bonuses that are guaranteed in nominal or real amounts via the insurance contract or a unilateral commitment from the insurance undertaking,

geometric mean: n th root of the product of the n positive numbers whose mean shall be calculated. In financial contexts, the numbers whose mean shall be calculated are normally written as

$$1 + \frac{r}{100}$$

where r is an effective yield or an interest rate expressed in per cent. This mean is a more accurate calculation of average yield or average interest rate than a normal arithmetic mean,

party entitled to information: an employee or survivor of an employee whose pension is safeguarded by a pension fund or a foreign institution for occupational retirement provision as referred to in Chapter 1, section 5, point 3 of the Act on Undertakings of Foreign Insurers and Institutions for Occupational Retirement Provisions in Sweden,

insurance based on collective bargaining agreements: personal insurance or non-life insurance that is

1. taken out by employers to give insurance cover to employees,
2. underwritten pursuant to a collective bargaining agreement specified in the insurance terms and conditions and that was agreed between an employer's organisation or an individual employer and an employees' organisation, and
3. underwritten by an insurance undertaking or a foreign insurer in accordance with the collective agreement,

solvency ratio: the ratio between own funds and the solvency capital requirement in accordance with Chapter 8 of the Insurance Business Act (2010:2043),

occupational pension: a pension for an employee or survivor of an employee which is provided by the employer and based on a collective bargaining agreement or individual agreements between the employee and the employer,

occupational pension insurance: life insurance which is linked to a professional activity and in which the disbursement of the insurance amount (a lump sum or periodic disbursement) depends on one or more persons reaching or being expected to reach a particular age, and insurance policies issued as supplements to such life insurance policies.

conditional bonus: agreed or unilaterally guaranteed bonus which is conditional upon changes in value and yield on assets or upon a certain actuarial result in respect to which the policyholders or other parties entitled to payment bear the risk, and

surrender: disbursement to the policyholder of an amount that corresponds in full or in part to the value of the insurance before the end of the agreed insurance term.

Chapter 2

Section 2 An insurance undertaking, a foreign insurer, a pension fund or a foreign institution for occupational retirement provision shall provide information to the policyholder and parties entitled to payment regarding

1. the name, legal form of business entity and complete address of the head office or, where applicable, the address of the agent or branch which has provided the insurance, and

2. the name and address of the foreign insurance provider's representative for third party motor insurance in Sweden where the insurance is third party motor insurance and the insurance issuer does not have a branch in the country.

For business pertaining to non-life insurance, the information regarding the complete address as in point 1, where applicable, may be limited to applying to the agent or branch providing the insurance.

For operations with large risks in non-life insurance such as those set out in Chapter 3, section 16 of the Insurance Business Act (2010:2043), only the contract or other documents that provide insurance cover and the insurance application to the extent that it is binding for the application need to contain the information referred to in point 1.

Chapter 3

Section 1 An insurance undertaking or a foreign insurer shall provide information about the following before an insurance contract is underwritten:

1. information pursuant to Chapter 2, section 2, and

2. the law applicable to the contract, if not Swedish law. Where the parties are free to choose the law, the law of the state that the insurance undertaking or the foreign insurer proposes to choose shall be specified.

Information regarding complaints-handling in accordance with Chapter 4, section 2, second paragraph shall also be provided before an insurance contract is underwritten.

A life insurance undertaking shall refer to its solvency and business report such that it is easy to find.

For non-life insurance contracts, the provisions in the first paragraph point 2 and the second paragraph only apply if the policyholder is a natural person.

These regulations shall enter into force on 1 January 2019 in respect of Appendix 2, Title C, point 4 and Title D point 4, and on 1 January 2016 for the remaining regulations.

ERIK THEDÉEN

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*Appendix 1***Information regarding occupational pension from a pension fund or a foreign institution for occupational retirement provision**

Pension funds and foreign institutions for occupational retirement provision shall provide members or beneficiaries whose pension is safeguarded by the fund or institution with information pursuant to the following:

1. Information regarding the fund or institution and its operations

A pension fund or foreign institution for occupational retirement provision shall observe the following:

1. Information about the fund or institution

Upon request, members and beneficiaries shall receive a copy of the most recent annual report.

2. Information about pension schemes

If the pension fund or foreign institution for occupational retirement provision safeguards more than one pension scheme, members and beneficiaries shall upon request receive the annual report for the pension scheme to which they belong, if such information is available.

2. Information regarding investment guidelines

A pension fund or foreign institution for occupational retirement provision, upon request by parties entitled to information and their representatives, shall provide information about investment guidelines. The investment guidelines of a pension fund shall be prepared pursuant to Chapter 2 of Finansinspektionen's regulations (FFFS 2015:11) regarding investment guidelines and consequence analysis for pension funds. The information shall include

- a) a general description of the assets related to occupational pension, and
- b) information regarding yield targets.

3. Complaints pertaining to information

In order to handle complaints that parties entitled to information may have regarding received information, a pension fund or foreign institution for occupational retirement provision shall be prepared as needed to provide answers or be able to refer to someone who can provide answers.

Appendix 2

Information about life insurance and occupational pension insurance

The appendix is divided into the following sections:

- A. Information before an insurance contract is concluded
- B. Information about the insurance's value in conjunction with a transfer, etc.
- C. Information during the insurance term but prior to payment
- D. Information during the payment period
- E. Additional information concerning occupational pension insurance

That which is stated about insurance undertakings in this Appendix also applies to foreign insurers conducting life insurance business in Sweden from a general agent or branch here in the country.

A. Information before an insurance contract is concluded

Before an insurance contract is concluded an insurance undertaking shall provide information pursuant to points 1-21 to the party that has been offered the insurance.

With regard to life insurances only applicable upon death and concluded for a period of not more than five years, or for a premium calculated and determined for not more than five years at a time, however, points 9–18 do not apply.

With regard to unit-linked insurances and depository insurances, points 11, 12 and 14–18 do not apply.

Insurance contracts

An insurance undertaking shall provide information that includes:

1. The term of the insurance contract.
2. Where applicable, how the insurance can be surrendered or changed to a paid-up policy, or how its value can be transferred.
3. The principles for how the value of an insurance is decided if it is surrendered or changed to a paid-up policy, and how the transferable amount is determined if the value of the insurance shall be transferred.
4. In what respects and under which circumstances the insurance undertaking can change the terms and conditions of the contract during the insurance term, particularly with regard to benefits, fees and other charges.
5. The policyholder's right to terminate the insurance contract and how this is done.
6. The main features of the tax rules which apply to the insurance.

Premiums

7. The terms and conditions which apply to premium payments.
8. The proportion of the premiums paid that relate to the main benefit and, where appropriate, supplementary benefits.

Fees and the distribution of profits

9. The principles for how the insurance undertaking's operational and risk expenses shall be covered and how the profit can be distributed. Information about current charges for operating expenses shall be given directly to the party to whom the insurance is offered, or be available on the insurance undertaking's website.

10. The principles for how the profits shall be allocated between both policyholders and other parties entitled to payment, and what procedures shall be followed when the insurance capital cannot be paid out due to the absence of a party entitled to payment.

11. The principles for how the profit may be used to cover losses.

12. The factors or conditions on which conditional bonus is dependent.

13. The principles for calculating bonuses added to contractual payments. Information about the currently applied longevity assumption shall be given directly to the party to whom the insurance is offered, or be available on the insurance undertaking's website.

14. The insurance undertaking's policy for collective consolidation and for the repossession of bonuses (reallocation) where an insurance contract has the allocated bonus option.

15. Information clearly stating which form of bonus or profit the insurance contract may benefit from.

16. If the insurance undertaking provides a bonus illustration, i.e. figures illustrating how the contractual benefits could be exceeded, the undertaking shall illustrate three different yield assumptions. There shall be clear information in terms of the bonus illustration being based on hypothetical assumptions about the future, and it not forming the basis for contractual benefits.

Financial information concerning the insurance undertaking

17. General information about long-term targets for investments that the insurance undertaking has established with an approximate division into

- a) shares and participating interests,
- b) properties and mortgages,
- c) fixed-interest assets, and
- d) other investments.

18. The long-term targets should be divided into:

- a) total assets,
- b) the assets covering liabilities for conditional bonuses, and
- c) the assets covering liabilities for guaranteed bonuses and other insurance commitments.

For information about the insurance undertaking's historical returns on capital and costs for asset management, industry-wide key figures and measurement methods should be used, if such exist. References to yield history in *Appendix 3*, however, shall be taken into account.

Special information for insurance where the policyholder specifies funds or other investment options for investing premiums

19. The process for switching funds and other investment options, and the extent of fees charged in such a switch.

20. The fees charged by the insurance undertaking to cover any operating expenses and tax, specifying the distribution in terms of

a) deductions from the premium prior to purchase of fund units or other assets,

b) any difference between the purchase and sale price of fund units or other assets, and

c) reductions in the value of the fund unit or asset.

21. A general description of the selection of funds and other investment options. Upon request by the party to whom the insurance is offered, information shall also be provided about an individual fund's primary focus or the risk profile of an individual asset. If the selection of funds and other assets is broad, the insurance undertaking may refer to its website for a more detailed description. References to information about funds and other investment options in *Appendix 3* shall also be taken into account.

B. Information about the insurance's value in conjunction with a transfer

When a policyholder wants to transfer the value of the insurance to another insurance undertaking, the information in points a or b shall be provided.

When an insurance undertaking offers a policyholder to transfer the value of the insurance within the same insurance undertaking or within such an insurance group as referred to in Chapter 19 of the Insurance Business Act (2010:943), or to implement significant changes to the terms and conditions, information shall also be provided in accordance with point c. The information shall be provided no later than when the insurance undertaking gives the policyholder the opportunity to accept the offer. An offer to transfer the value of the insurance is equivalent to the offer by an insurance undertaking to a policyholder to repurchase and take out a new insurance.

A policyholder in the first and second paragraph also refers to an employee for whom the employer has taken out occupational pension insurance.

a) An insurance undertaking *from* which the transfer is made shall provide the following information to the policyholder:

1. Information that the previous insurance contract is terminated and that the transferred value will be placed in a new insurance pursuant to a new contract.

2. Where appropriate, the insurance undertaking shall provide information stating
- that the insurance belongs to a special bonus group since the insurance applies with a transfer option,
 - the value that will be transferred, the fees that will be charged and the adjustments that will be made to the existing insurance value,
 - that the new insurance may entail an altered contractual insurance amount, waiver of premium and other risk cover, compared to the current insurance,
 - that, in conjunction with unit-linked insurance, the possibility to choose the investment is changed,
 - the date upon which the insurance undertaking's responsibility terminates.

b) An insurance undertaking to which the transfer is made, where applicable, shall provide the following information to the policyholder.

1. The insurance's value broken down into contractual benefits and other. No such breakdown is required where the entire value is deemed as a premium for a commitment.

2. All information which shall be provided before an insurance contract is concluded pursuant to these regulations. This information does not need to be provided if the transfer was already agreed when the insurance contract was concluded.

c) The insurance undertaking shall provide the policyholder with information that clearly states what the transfer of the insurance's value or the significant change in the terms and conditions entails.

The information shall as a minimum describe the difference with regard to

1. the contractual insurance amount,
2. other insurance benefits,
3. fees, and
4. the financial risk that arises for the policyholder.

C. Information during the insurance term but prior to payment

During the term of the insurance contract and up to payment, an insurance undertaking shall provide information to policyholders and parties entitled to payment which includes the following:

Changes

1. Information referred to in A 1-21 which is of major significance for the application of the contract and which is affected by a decided change in legislation, the insurance terms and conditions, the fund rules, or the insurance undertaking's

policy regarding collective consolidation. Where the insurance undertaking makes a decision regarding reallocation of bonuses, information about this decision as well as expected effects of the reallocation shall be provided as soon as possible.

Annual information

On an annual basis, the insurance undertaking shall provide information about premiums paid, etc. for the past period in accordance with the following:

2. Where appropriate, information about

- guaranteed bonuses that were paid or increased the insurance's value during the period,
- conditional bonuses that were paid or changed the insurance's value during the period,
- the insurance's guaranteed value at the beginning and end of the period, or about the guarantee's design, and
- that disbursement will begin within the next twelve months.

The information about guaranteed or conditional bonus may be replaced by information about the insurance capital at the beginning and end of the period.

3. Where information is provided about allocated bonus, notification that it is included in the insurance undertaking's risk capital and what this entails.

4. If, ahead of underwriting, the insurance undertaking has provided a bonus illustration, the policyholder shall be informed of the differences between the figures of the illustration and the actual performance of the value of the insurance. This provision does not apply to unit-linked and depository insurances.

5. Amendments to the principles applied to the calculation of the amounts payable.

6. The payment amount, including any bonus, which would have been disbursed on death as per the closing date of the past period in cases where this payment deviates from the value of the insurance.

7. Fees that will be charged to the value in conjunction with any surrender or transfer of the value of the insurance.

8. Other fees charged during the period.

9. Other causes material to the change in the insurance's value during the year, such as

- returns allocated to the insurance or preliminarily distributed,
- fees for taxes deducted from the value of the insurance,
- risk premiums deducted, and
- inheritance profit assigned to the insurance or preliminarily distributed,

10. Where relevant, information that the undertaking has exercised a right to amend the insurance terms in connection with periodic payments commencing, for example with regard to fees and assumptions about longevity.

11. A reminder that the policyholder may need to review the insurance in certain respects, for example in terms of beneficiaries, the need for survivor benefits and the choice of funds before the disbursement period of unit-linked or depository insurance begins.

D. Information during the payment period

During the payment period, an insurance undertaking shall provide the following information to policyholders and parties entitled to payment:

Changes

1. Information referred to in A 1-21 which is of material significance to the contract and which is affected by a decided change in legislation, the insurance terms and conditions, the fund rules, or the insurance undertaking's policy regarding collective consolidation. Where the insurance undertaking makes a decision regarding reallocation of bonuses, information about this decision as well as expected effects of the reallocation shall be provided as soon as possible.

2. Amendments to the principles or material changes to assumptions used to calculate bonuses to be added to contractual amounts during the payment period.

Annual information

The insurance undertaking shall annually provide information about the following:

3. Information for the period regarding

- the current amount payable,
- the returns assigned to the insurance or preliminarily distributed,
- fees deducted with regard to taxes,
- other fees that have been deducted, and
- where applicable, information that the benefit payments will cease within the next twelve months.

4. If, ahead of underwriting, the insurance undertaking has provided a bonus illustration with information about future amounts, the policyholder shall be informed of the differences between the figures of the illustration and the actual amounts of the period.

E. Additional information concerning occupational pension insurance

An insurance undertaking conducting business related to occupational pension insurance shall observe the following when information is provided to members and beneficiaries.

1. Information about the insurance undertaking

Upon request, members and beneficiaries shall receive a copy of the most recent annual report.

2. Information about pension schemes

If the insurance undertaking safeguards more than one pension scheme, members and beneficiaries shall upon request receive the annual report for the pension scheme they belong to, if such information is available.

In conjunction with changes to the rules of a pension scheme, members and beneficiaries shall receive relevant information about the change within a reasonable time following the decision to make the change.

Members and beneficiaries shall receive adequate information regarding the benefits they are entitled to and the payment options that apply when pensions or other benefits become due.

Upon request, members and beneficiaries shall receive detailed and comprehensive information about

- a) how the pension benefits are determined when the full period of service has been earned with regards to a defined-benefit plan,
- b) the size of the pension benefits if employment is terminated, and
- c) terms and conditions for the transfer of pension rights if employment is terminated.

3. Information regarding investment guidelines

An insurance undertaking, upon request by parties entitled to payment or their representatives, shall provide information about the undertaking's principles for investing in assets. The information shall include

- a) a general description of the assets related to the occupational pension,
- b) information regarding yield targets, and
- c) information regarding risk levels in assets and commitments as a whole.

*Appendix 3***Contents of the key investor document**

The appendix is divided into the following sections:

1. Introduction
2. Savings and yield
3. Payment
4. Fees
5. Insurance cover
6. Terms and conditions for the transfer of savings or surrender
7. Transfer of savings to the insurance undertaking
8. Other information

That which is stated about insurance undertakings in this Appendix also applies to foreign insurers conducting life insurance business in Sweden from a general agent or branch here in the country.

An insurance undertaking should provide information in the form of a key investor document to the party being offered private individual life insurance of savings-type.

The key investor document should describe the characteristics of the product that can be of material significance for the consumer. The information should be concise, well organised and easily accessible. The key investor document should be structured in such a manner as to facilitate comparisons with other savings-type life insurance products. Therefore, the headings set out in this appendix should be used in the same order in the key investor document.

The terminology in Pensionsorden (glossary of pension terminology compiled by the Swedish social insurance authorities and the insurance industry) should be used in the key investor document.

See www.minpension.se/Dokument/Pensionsorden.pdf (in Swedish).

It should be stated that the key investor document does not contain a full overview of the pre-purchase information. The key investor document should be updated on a yearly basis or when the information included in the key investor document has changed significantly.

A key investor document for savings-type life insurance should as a minimum contain the following information using the italicised headings in the same order:

1. Introduction*Product designation and insurer*

- A) Description of the product and the name of the insurance undertaking.

Target group

- b) A description of the product's target group.

The insurance undertaking's financial strength

Information about the insurance undertaking's solvency ratio and an explanation that a solvency ratio of at least 100 per cent means that the undertaking fulfils the EU requirements for the capital buffer in relation to the scope and composition of the operations. If the insurance undertaking has an official policy regarding its solvency ratio, this information should also be provided.

2. Savings and yield

Responsibility for investments

d) Information about whether the policyholder, the insured or the insurance undertaking decides how the insurance capital shall be invested, and thereby determines the level of financial risk.

A. Where the insurance undertaking invests the insurance capital:

Guarantee

e) Information regarding whether or not the product contains a guarantee.

Where there is a guarantee, the structure and scope of the guarantee should be clearly described. Where applicable, the guaranteed interest rate should be stated both before and after any fees and taxes that will be charged.

Surplus management

f) Information about whether the insurance undertaking distributes profits to owners or guarantors or is a mutually working undertaking. It should also describe how the surplus is distributed. A mutually working undertaking should describe the principles for the bonus distribution and state current information about bonus interest rates and degrees of collective consolidation.

Investment objective

g) Information about investment objectives and long-term investment goals for the product in question.

The investment objective should specify the distribution of the portfolio between shares and participations, property, interest-bearing assets and other assets. The actual distribution for the most recent half-year mark should also be stated.

Past performance

h) Information about the product's actual return.

Actual return refers here to the yield earned by the insurance capital, including any share of surplus and following deductions for all fees, including tax charges. The calculations should be made for an insurance that has the same terms and conditions as the offered product or is comparable to this product. The calculations should be based on a standard assumption that the premium payment will be made as a lump-sum premium totalling SEK 100,000. Where risk fees may arise such do not need to be taken into consideration in the calculations, but a comment regarding this should be included in the key investor document. Actual return

should be calculated in the same manner for each year since the policy was taken out as if the policy was taken out ten years ago. If the insurance undertaking has underwritten the product, or a similar product, for a period shorter than ten years, this should be stated. In that case, the calculation period should be as long as permitted by the undertaking's experience of the product.

The actual return should be stated both as annual yields for each year and as an average effective yield since the policy was taken out, as if the insurance was taken out three, five and ten years ago, respectively, and under the assumption that the insured is still alive. If the insurance period is shorter than ten years, the period should be appropriately adjusted. Where fees arise in conjunction with surrender or transfer, such should be mentioned.

It should also be possible to use other methods to fairly determine the actual annual return. The average effective annual return should then be calculated as a geometric mean. The method for calculating the geometric mean set out in *Appendix 4* should be used.

B. Where the consumer invests the capital:

Guarantee

i) Information that the product does not contain a guarantee, or if this is not the case, the form of the guarantee.

Assets in which the capital can be invested

j) Information about the types of assets in which the capital can be invested.

If the capital can be invested in funds, a general description of the fund selection should be provided.

3. Payment

k) Information about the age at which payment at the earliest and at the latest can begin. The shortest and longest payment period and information about whether the payment period can be changed should also be stated.

Information should also be provided stating that the insurance undertaking's longevity assumptions affect the size of the paid amounts if the customer chooses life-long payment.

Where the insurance is life-long, the insurance undertaking should provide an example to show the monthly disbursements for a 65-year-old man and woman, as appropriate, with insurance capital totalling SEK 100,000.

4. Fees

l) Information about the total fees and costs charged to the insurance.

Information about how often the fees are charged and, where applicable, the basis on which they are calculated should be stated. Administrative fees should be

specified, for example premium fees and other deposit fees, fixed fees and fees calculated as a percentage of the capital under management.

For unit-linked and depository insurance products – information about the highest and lowest annual or performance-based fee in the current offering of funds or assets, and the average annual or performance-based fee weighted with actual volumes in the relevant fund.

If deposit or withdrawal fees may arise, these should be stated, as well as any performance-related fees. Costs of any management services should also be stated.

For traditional life insurance products – information about whether the costs for asset management are covered by the administrative fees or are charged to the customer's insurance capital. An approximate value of the asset management costs should be stated.

Tax rules for policyholders

m) Information about whether the product is classified as a P or K insurance and what this entails. Deduction rules should be stated and taxation in conjunction with payment should be described.

Example

n) An example should be provided for an insurance with a lump-sum premium of SEK 100,000 that states the total fees for the first year in SEK broken down into administrative fees, fees to cover fund and asset management costs and taxes.

5. Insurance cover

o) A description of the insurance cover included in the product and additional options. The description should clearly state the cost for any cover, for example via a specially disbursed premium today or lower pension in the future. The description should also state if a health evaluation is needed for any of the insurance covers.

6. Terms and conditions for the transfer of savings or surrender

p) Information about any limitations to the possibility to transfer the savings. If a market value adjustment is applied, this should be stated. All fees associated with the transfer should be stated, for example administrative fees and maturity-based fees.

7. Transfer of savings to the insurance undertaking

q) Information about any fees charged when transferring savings to the insurance undertaking. If the product is a traditional life insurance, where applicable, the principles that serve as a basis for the portion of the transferred capital that will be guaranteed should be stated.

8. Other information

r) Information regarding

- that the purpose of the key investor document is to provide general information and facilitate comparisons,
- that the key investor document does not contain a full overview of the pre-purchase information,
- where the consumer can find terms and conditions and additional information about the product and the insurance undertaking,
- that the consumer can receive additional information from the Swedish Consumers Insurance Bureau,
- which supervisory authority supervises the insurance undertaking,
- that the Swedish Consumer Agency monitors compliance with the Marketing Act (2008:486), and
- the date the key investor document was published.

Appendix 4

Calculation of the geometric mean

Calculation of the average total yield or bonus interest rate using the geometric approach

The geometric approach is commonly used to calculate funds' average yield over a given period. The intention is to summarise a varying yield or accumulation of interest over a period fairly as a constant, average accumulation of interest over the same period.

In technical terms, the approach can be described with words as follows. The time-weighted mean of the yield or interest rate is calculated based on a time-weighted standard arithmetic mean for corresponding yield or interest rate intensities. The geometric mean is determined then by recalculating the average intensity to a standard effective yield or interest rate.

If the yields or interest rates for which the mean is calculated apply on the basis of the calendar year, the time-weighting is simple and each calendar year is given the same weight. However, if, for example, the bonus interest rates were applied in periods of varying length, expressed in months, they will be time-weighted when calculating the mean. A period of three months is time-weighted at 25 per cent of one year, while a period of twelve months receives a weight of 100 per cent, and so on.

If we assume five calendar year yields $T(1)$, $T(2)$, ..., $T(5)$, e.g. 5%, 6%, 10%, 4% and -1%, the corresponding intensities are $u(1)$, $u(2)$, ..., $u(5)$. The intensities are defined by $u(i) = \log(1+T(i))$, calculated using a base 10 logarithm. In our example, the intensities are $\log 1.05$, $\log 1.06$, ..., $\log 1.2$. Calculate the arithmetic mean $u = [u(1)+u(2)+\dots+u(5)]/5$. The geometric mean is then $10^u - 1$. In our example, the arithmetic mean is 4.81 per cent while the geometric mean is 4.74 per cent. It is possible to prove that the geometric mean is never larger than the arithmetic mean and that they are the same if all inputs are the same.

The geometric mean is fair in the sense that an amount invested at the start of the five-year period has the same end value if it accumulates interest or grows:

- year for year with the five stated amounts, or
- year for year with the same amount, namely the geometric mean.

It follows that the accumulation of interest over the five years using the arithmetic mean results in an amount that is too large and misleading.

An example with varying subperiod lengths: Let the yields or interest rates be the same as in the previous example, but assign the subperiods lengths $t(1)$, $t(2)$, ..., $t(5)$, e.g. 11, 7, 6, 17 and 19 months (still a total of 60 months or five years). The weighted intensities are then given the time-weighted arithmetic mean $u = [11 \cdot u(1) + 7 \cdot u(2) + \dots + 19 \cdot u(5)]/60$. The geometric mean is, as previously, $10^u - 1$. The weighted geometric mean is 3.38 per cent while the corresponding weighted arithmetic mean is 3.43 per cent.

To calculate the geometric mean, G , when yield or interest rates are expressed as a per cent, we can use the following formulas:

$$G = 100(10^{UA} - 1)$$

$$UA = \frac{1}{L} \sum_{k=1}^n d_k \log\left(1 + \frac{r_k}{100}\right)$$

$$L = \sum_{k=1}^n d_k$$

d_k = length of the subperiod k

r_k = the yield or interest rate for the subperiod, k , expressed as effective yield or interest rate, in per cent.

The formula can also be written without logarithms:

$$G = 100 \left(\left(\prod_{k=1}^n \left(1 + \frac{r_k}{100} \right)^{d_k} \right)^{\frac{1}{L}} - 1 \right) = 100 \left(\left(\left(1 + \frac{r_1}{100} \right)^{d_1} \cdots \left(1 + \frac{r_n}{100} \right)^{d_n} \right)^{\frac{1}{L}} - 1 \right)$$