

## Sampo Group's **Annual Report 2013**

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Life Insurance Underwriting Risks Life Insurance Underwriting Risks

# **Life Insurance Underwriting Risks**

Life insurance risks encompass underwriting risk and discount rate risk in technical provisions. Underwriting risk includes biometric, policyholder behavior and expense risks.

## Life Insurance Underwriting Risks

Pandemics, catastrophes,  
business

Changes in longevity,  
mortality, morbidity and  
disability, or inaccuracy of  
used models

### **Biometric risks**

- Actual pensions are being paid for a longer time than expected
- Actual mortality, disability or morbidity rate is greater than expected

## Biometric Risks

Biometric risks in life insurance refer mainly to the risk that the company has to pay more mortality, disability or morbidity benefits than expected or the company has to keep paying pension payments to the pension policyholders for a longer time (longevity risk) than expected when pricing the policies. The specific case in which a single event or series of single events of major magnitude lead to a significant deviation in actual benefits and payments from the total expected payments is called catastrophe risk.

Long duration of policies and restriction of Mandatum Life's right to increase tariffs increases biometric risks. If the premiums turn out to be inaccurate and pricing cannot be changed afterwards, technical provisions have to be supplemented with an amount corresponding to the expected losses.

The table Claim Ratios After Reinsurance, Mandatum Life, 2013 and 2012 shows the insurance risk result in Mandatum Life's Finnish life insurance policies. The ratio of the actual claims costs to the assumed was 79 per cent in 2013 (82 per cent in 2012). Sensitivity of the insurance risk result can also be assessed on the basis of the information in the table. For instance the increase of mortality by 100 per cent would increase the amount of benefit payments from EUR 16 million to EUR 32 million.

**Claim Ratios After Reinsurance**  
*Mandatum Life, 2013 and 2012*

EURm	Risk income	Claim expense	2013		2012	
			Claim ratio	Risk income	Claim expense	Claim ratio
<b>Life insurance</b>	<b>47.4</b>	<b>27.1</b>	<b>57%</b>	<b>42.4</b>	<b>25.2</b>	<b>59%</b>
Mortality	29.8	16.1	54%	25.9	14.9	57%
Morbidity and disability	17.6	11.0	62%	16.5	10.3	62%
<b>Pension</b>	<b>57.5</b>	<b>55.5</b>	<b>97%</b>	<b>57.7</b>	<b>57.3</b>	<b>99%</b>
Individual pension	9.1	9.8	108%	9.5	10.1	106%
Group pension	48.4	45.7	94%	48.2	47.2	98%
Mortality (longevity)	43.9	43.3	99%	43.5	44.2	102%
Disability	4.5	2.4	52%	4.7	3.0	64%
<b>Mandatum Life</b>	<b>104.8</b>	<b>82.6</b>	<b>79%</b>	<b>100.1</b>	<b>82.5</b>	<b>82%</b>

Longevity risk is the most critical biometric risk in Mandatum Life. Most of the longevity risk arises from the with profit group pension portfolio. With profit group pension policies have mostly been closed for new members for years and due to this the average age of members is relatively high, i.e. around 69 years. In the unit-linked group pension and individual pension portfolio the longevity risk is less significant because most of these policies are fixed term annuities including death cover compensating the longevity risk.

The annual longevity risk result and longevity trend is analyzed regularly. The assumed life expectancy related to the technical provisions for group pensions was revised in 2002 and additional changes were made in 2007. The cumulative longevity risk result has been positive since these revisions. The longevity risk result of group pension for the year 2013 was EUR 0.6 million (EUR -0.7 million in

2012).

Mortality risk result in life insurance is positive. A possible pandemic is seen as the most significant risk that could adversely affect the mortality risk result.

The insurance risk result of other biometric risks has been profitable in total, although the different risk results differ considerably. In a longer term, disability and morbidity risks are mitigated by the company's right to raise insurance premiums for existing policies in case the claims experience deteriorates.

New gender neutral pricing is fully in-force for all new retail policies with biometric risks. This creates more uncertainty for the future, although changes are not expected to have a significant impact on risk result.

The insurance portfolio of Mandatum Life is relatively well diversified and does not include major concentration risks. To further mitigate the effects of possible risk concentrations, Mandatum Life has the catastrophe reinsurance in place.

## **Policyholder Behavior and Expense Risks**

Uncertainty related to the behavior of the policyholders is a major risk as well. The policyholders have the right to cease paying premiums (*lapse risk*) and the possibility to interrupt their policies (*surrender risk*). Ability to keep lapse and surrender rates in a low level is a crucial success factor especially for the expense result of unit-linked business.

From ALM point of view surrender and lapse risks are less significant because in Mandatum Life, over 90 per cent of with profit policies are pension policies in which surrender is possible only in exceptional cases. For ALM risk, surrender risk is therefore only relevant in individual life and capital redemption policies of which the related technical provisions amounts to only 6 per cent (EUR 237 million) of the total with profit technical provisions. Furthermore, the supplements to technical provisions are not paid out at surrender which also reduces the surrender risk related to the with profit policies. Surrender and lapse risks are taken into account when the company is analyzing its ALM risk.

The company is also exposed to *expense risk*, which is a risk that the future operating expenses exceed the level that was anticipated when pricing the insurances. Policy terms and tariffs cannot usually be changed materially during the lifetime of the insurance, which increases the expense risk. The main challenge is to keep the expenses related to insurance administrative processes and complex IT infrastructure at an efficient level. In year 2013, expense result was EUR 14.2 million (EUR 5.8 million in 2012). Mandatum Life does not defer insurance acquisition costs.

## **Discount Rate Risk in Technical Provisions**

Discount rate risk in technical provisions is the main risk affecting the adequacy of technical provisions. The guaranteed interest rate in policies is fixed for the whole policy period. Thus, if market interest rates and expected investment returns fall, technical provisions may have to be supplemented.

In most with profit policies, the guaranteed interest rate is 3.5 per cent. In individual policies sold in Finland before 1999, the guaranteed interest rate is 4.5 per cent, which is also the statutory maximum

discount rate of these policies. With respect to these policies, the maximum discount rate used when discounting technical provisions has been decreased to 3.5 per cent. As a result, technical provisions have been supplemented with EUR 75 million in 2013 (EUR 71 million in 2012). In addition, EUR 44 million has been reserved to lower the interest rate of with profit liabilities to 2.25 per cent in 2014 and EUR 26 million for the year 2015 to lower the interest rate of with profit liabilities to 2.75 per cent, i.e. Mandatum Life has set up an extra reserve of EUR 146 million as part of technical provisions.

The provisions related to each product type and guaranteed interest rates are shown in the table Analysis of the Change in Provisions before Reinsurance, Mandatum Life, 2013. The table also shows the change in each category during 2013.

**Analysis of the Change in Provisions before Reinsurance**  
**Mandatum Life, 2013**

EURm	Liability 2012	Premiums	Claims paid	Expense charges	Guaranteed interest	Bonuses	Other	Liability 2013	Share %
<b>Mandatum Life parent company</b>									
<b>Unit-linked total</b>	<b>3,699</b>	<b>880</b>	<b>-323</b>	<b>-52</b>	<b>0</b>	<b>0</b>	<b>271</b>	<b>4,475</b>	<b>52</b>
Individual pension insurance	894	81	-8	-13	0	0	60	1,014	12
Individual life	1,301	311	-144	-14	0	0	75	1,530	18
Capital redemption operations	1,140	430	-166	-18	0	0	103	1,489	17
Group pension	364	57	-5	-6	0	0	33	442	5
<b>With-profit and others total</b>	<b>4,052</b>	<b>156</b>	<b>-394</b>	<b>-36</b>	<b>139</b>	<b>3</b>	<b>-11</b>	<b>3,910</b>	<b>46</b>
<b>Group pension</b>	<b>2,411</b>	<b>64</b>	<b>-188</b>	<b>-7</b>	<b>80</b>	<b>3</b>	<b>-28</b>	<b>2,335</b>	<b>27</b>
Guaranteed rate 3.5%	2,321	53	-181	-6	77	2	-53	2,213	26
Guaranteed rate 2.5% or 0.0%	90	11	-6	-1	3	0	25	122	1
<b>Individual pension insurance</b>	<b>1,216</b>	<b>21</b>	<b>-156</b>	<b>-6</b>	<b>51</b>	<b>0</b>	<b>16</b>	<b>1,141</b>	<b>13</b>
Guaranteed rate 4.5%	1,015	14	-125	-5	44	0	2	945	11
Guaranteed rate 3.5%	157	4	-22	-1	5	0	9	153	2
Guaranteed rate 2.5% or 0.0%	44	2	-9	-0	1	0	6	43	1
<b>Individual life insurance</b>	<b>253</b>	<b>32</b>	<b>-36</b>	<b>-10</b>	<b>8</b>	<b>0</b>	<b>-14</b>	<b>233</b>	<b>3</b>
Guaranteed rate 4.5%	72	5	-8	-2	3	0	-2	68	1
Guaranteed rate 3.5%	121	11	-15	-4	4	0	-7	109	1
Guaranteed rate 2.5% or 0.0%	61	17	-13	-6	1	0	-4	56	1
<b>Capital redemption operations</b>	<b>6</b>	<b>0</b>	<b>-1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-1</b>	<b>4</b>	<b>0</b>
Guaranteed rate 3.5%	0	0	0	0	0	0	0	0	0
Guaranteed rate 2.5% or	6	0	-1	0	0	0	-1	4	0

0.0%

<b>Future bonus reserves</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Reserve for decreased discount rate</b>	<b>118</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>28</b>	<b>146</b>	<b>2</b>
<b>Assumed reinsurance</b>	<b>2</b>	<b>4</b>	<b>-1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>
<b>Other liabilities</b>	<b>47</b>	<b>34</b>	<b>-12</b>	<b>-12</b>	<b>1</b>	<b>0</b>	<b>-12</b>	<b>45</b>	<b>1</b>
<b>Mandatum Life parent company total</b>	<b>7,751</b>	<b>1,036</b>	<b>-716</b>	<b>-88</b>	<b>139</b>	<b>3</b>	<b>260</b>	<b>8,385</b>	<b>98</b>
<b>Subsidiary Mandatum Life Insurance Baltic SE</b>	<b>153</b>	<b>32</b>	<b>-25</b>	<b>-3</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>159</b>	<b>2</b>
Unit-linked	134	29	-22	-2	0	0	3	142	2
Others	19	3	-3	-1	1	0	-1	18	0
<b>Mandatum Life group total</b>	<b>7,904</b>	<b>1,068</b>	<b>-741</b>	<b>-91</b>	<b>139</b>	<b>3</b>	<b>262</b>	<b>8,544</b>	<b>100</b>

Unit linked business has been Mandatum Life's main focus area since year 2001. Since that the trend of unit linked technical provisions have been upward and annual average change in technical provisions has been + 26 per cent per annum. Due to the nature of unit linked business, volatility between years is relatively high.

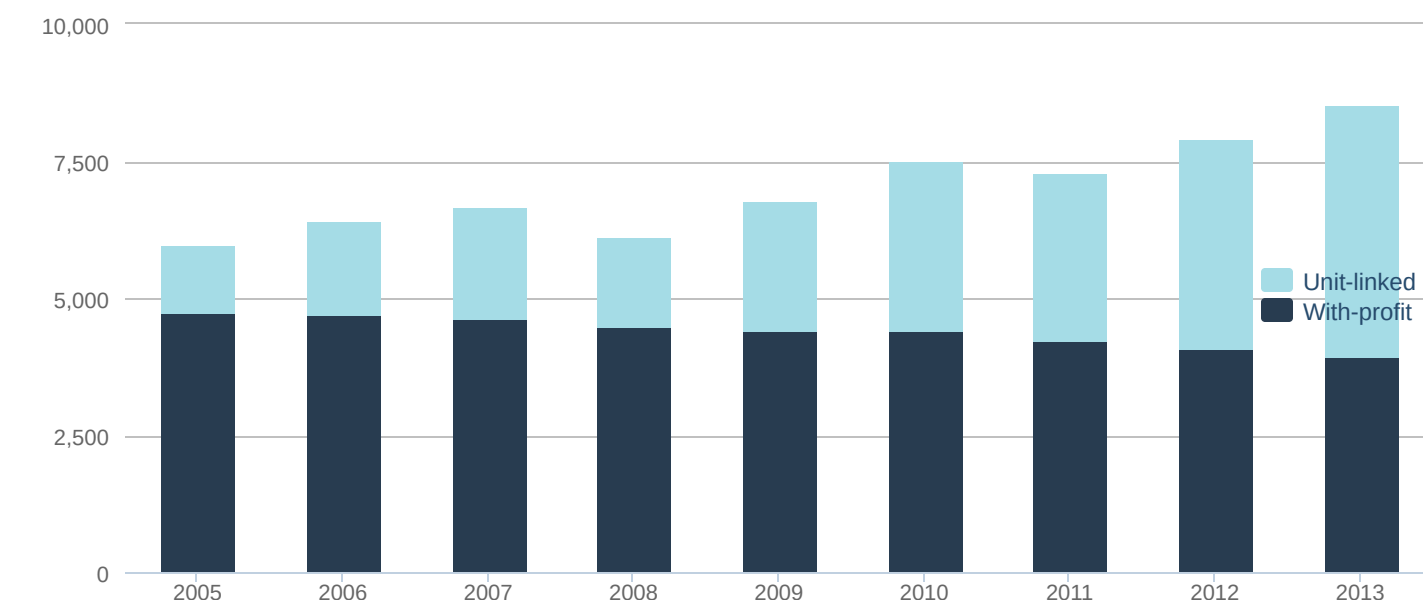
In contrast, the trend of with profit technical provisions is downward, especially portfolios with highest 4.5 per cent and 3.5 per cent guarantees. Technical provisions with highest guarantees fell by EUR 197 million. In total, with profit technical provisions decreased by EUR 143 million including a strengthening of the discount rate reserves by EUR 28 million.

Unit-linked technical provisions exceeded with profit technical provisions during year 2013.

The development of the structure and amount of Mandatum Life's technical provisions is shown in the figure Development of With Profit and Unit-linked Technical Provisions, Mandatum Life, 2004–2013.

#### **Development of With Profit and Unit-linked Technical Provisions** *Mandatum Life, 2004-2013*

EURm



Unit-linked  
With-profit

The table Expected Maturity of Insurance and Investment Contracts before Reinsurance, Mandatum Life, 31 December 2013 shows the expected maturity and duration of insurance and investment contracts of Mandatum Life. The sensitivity of technical provisions to changes in discount rates can be assessed on the basis of the durations shown in the table.

**Expected Maturity of Insurance and Investment Contracts before Reinsurance**  
**Mandatum Life, 31 December 2013**

EURm	Duration	2014-2015	2016-2017	2018-2022	2023-2027	2028-2032	2033-2037	2038 -
<b>Mandatum Life parent company</b>								
<b>Unit-linked total</b>		8.6	759	688	1,254	884	785	357 429
Individual pension insurance		11.4	66	112	257	234	196	143 172
Individual life		7.6	327	279	432	286	235	111 106
Capital redemption operations *)		7.2	336	255	448	264	280	49 74
Group pension		11.3	29	42	117	100	74	54 77
<b>With-profit and others total</b>		<b>8.6</b>	<b>870</b>	<b>699</b>	<b>1,280</b>	<b>867</b>	<b>589</b>	<b>395 604</b>
<b>Group pension</b>		10.0	383	353	752	576	423	305 477
Guaranteed rate 3.5%		10.0	362	338	724	554	406	292 453
Guaranteed rate 2.5% or 0.0%		9.9	21	15	28	21	17	13 24
<b>Individual pension insurance</b>		6.4	302	278	430	230	122	55 57
Guaranteed rate 4.5%		6.4	251	230	368	198	101	44 48
Guaranteed rate 3.5%		6.4	39	38	50	26	18	9 7
Guaranteed rate 2.5% or 0.0%		5.8	12	10	12	6	3	2 2
<b>Individual life insurance</b>		9.9	49	52	73	50	38	32 67
Guaranteed rate 4.5%		10.8	16	14	22	16	12	12 28
Guaranteed rate 3.5%		10.2	20	22	35	24	19	15 30
Guaranteed rate 2.5% or 0.0%		7.8	12	16	17	9	7	5 9



<b>Capital redemption operations *)</b>	6.9	1	0	1	1	1	0	0
Guaranteed rate 3.5%	0.0	0	0	0	0	0	0	0
Guaranteed rate 2.5% or 0.0%	6.9	1	0	1	1	1	0	0
<b>Future bonus reserves</b>	1.0	0	0	0	0	0	0	0
<b>Reserve for decreased discount rate</b>	3.3	89	13	21	11	5	3	3
<b>Assumed reinsurance</b>	0.5	6	0	0	0	0	0	0
<b>Other liabilities</b>	1.0	41	3	2	0	0	0	0
<b>Mandatum Life parent company total</b>	<b>8.6</b>	<b>1,629</b>	<b>1,386</b>	<b>2,534</b>	<b>1,751</b>	<b>1,374</b>	<b>752</b>	<b>1,033</b>
<b>Subsidiary Mandatum Life Insurance Baltic SE</b>		15	17	38	16	27	9	37
Unit-linked		12	13	32	14	26	9	37
Others		4	3	7	2	1	0	0
<b>Mandatum Life group total</b>		<b>1,644</b>	<b>1,403</b>	<b>2,572</b>	<b>1,767</b>	<b>1,401</b>	<b>761</b>	<b>1,070</b>
*) Investment contracts								

## Life Insurance Risk Management

Biometric risks are managed by careful risk selection, by pricing to reflect the risks and costs, by setting upper limits for the protection granted and by use of reinsurance.

Reinsurance is used to limit the amount of individual mortality and disability risks. The Board of Directors annually determines the maximum amount of risk to be retained on the company's own account, which for Mandatum Life is EUR 1.5 million per insured. To mitigate the effects of possible catastrophes, Mandatum Life participates in the catastrophe reinsurance bought jointly by Finnish life insurance companies.

Risk selection is part of the day-to-day business routines in Mandatum Life. Mandatum Life's Underwriting Policy sets principles for risk selection and limits for sums insured. Compliance with the principles and limits set in the Underwriting Policy are monitored continuously.

The risk result is followed actively and analyzed thoroughly annually. Mandatum Life measures the efficiency of risk selection and adequacy of tariffs by collecting information about the actual claims expenditure for each product line and each type of risk and comparing it to the claims expenditure assumed in insurance premiums of every risk cover.

Technical provisions are analyzed and the possible supplement needs are assessed regularly. Assumptions related to technical provisions are reviewed annually. Adequacy of technical provisions is tested quarterly. Tariffs for new policies are set and the Underwriting Policy and assumptions used in calculating technical provisions are updated based on adequacy tests and risk result analysis. Tariffs and prices, as well as the reinsurance principles and reserving principles are reviewed and approved annually by the Board of Directors of Mandatum Life.