

# Life Insurance Underwriting Risks

In 2014 Mandatum Life received from Suomi Mutual its with profit group pension portfolio. This group pension portfolio and related assets are segregated (“segregated group pension portfolio”) from rest of the Mandatum Life balance sheet. The segregated group pension portfolio has its own profit sharing

rules, investment policy and asset liability management committee. The with profit liabilities other than segregated group pension portfolio are referred to as the “original” with profit liabilities hereafter.

## Biometric Risks

The long duration of policies and restriction of Mandatum Life’s right to raise tariffs increases biometric risks. If the premiums turn out to be inadequate and cannot be increased, technical provisions have to be supplemented with an amount corresponding to the increase in expected losses.

Mandatum Life’s Finnish life insurance policies. The ratio of the actual claims costs to the assumed was 72 per cent in 2015 (79 per cent in 2014). 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 10 million to EUR 19 million.

The table Claim Ratios After Reinsurance, Mandatum Life, 2015 and 2014 shows the insurance risk result in

### Claim Ratios After Reinsurance

Mandatum Life, 2015 and 2014

EURm	2015			2014		
	Risk income	Claim expense	Claim ratio	Risk income	Claim expense	Claim ratio
<b>Life insurance</b>	<b>42.4</b>	<b>20.1</b>	<b>47%</b>	<b>45.3</b>	<b>27.5</b>	<b>61%</b>
Mortality	24.0	9.7	40%	27.2	16.5	61%
Morbidity and disability	18.4	10.4	57%	18.1	11.0	61%
<b>Pension</b>	<b>68.1</b>	<b>59.9</b>	<b>88%</b>	<b>63.1</b>	<b>58.5</b>	<b>93%</b>
Individual pension	11.6	12.3	106%	9.6	10.2	107%
Group pension	56.5	47.6	84%	53.5	48.3	90%
Mortality (longevity)	48.9	43.2	88%	49.4	45.6	92%
Disability	7.6	4.4	58%	4.1	2.7	66%
<b>Mandatum Life</b>	<b>110.5</b>	<b>80.0</b>	<b>72%</b>	<b>108.4</b>	<b>86.0</b>	<b>79%</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. for the segregated group pension portfolio the average age is around 67 years and for the other (original) group pension portfolios it’s 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. For the segregated group pension portfolio, the assumed life expectancy related to the technical provisions was revised in 2014 and for the other group pension portfolios in 2002 and 2007. In total, these changes increased the 2014 technical provision by EUR 106 million (EUR 108 million in 2014) including a EUR 87 million longevity reserve for the segregated group pension portfolio. The cumulative longevity risk result has been positive since these

revisions. The longevity risk result of group pension for the year 2015 was EUR 5.7 million (EUR 3.8 million in 2014).

The 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 overall, although the different risk results differ considerably. In the 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.

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

## Policyholder Behavior and Expense Risks

From an ALM point of view, surrender and lapse risks are less significant because in Mandatum Life, around 90 per cent of with profit technical provisions consist of 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 5 per cent (EUR 233 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.

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 a competitive level. In year 2015, the expense result was EUR 25 million (EUR 19 million in 2014). Mandatum Life does not defer insurance acquisition costs.

## Discount Rate Risk in Technical Provisions

In most of the original 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 55 million in 2015 (EUR 69 million in 2014). In addition, EUR 79 million has been reserved to lower the interest rate of with profit liabilities to 1.0 per cent in 2016, EUR 71 million for the year 2017 to lower the interest rate of with profit liabilities to 1.25 per cent and EUR 38 million for the year 2018 to lower the interest rate of with profit liabilities to 2.25 per cent. In total, Mandatum Life has set up an extra reserve of EUR 244 million as part of the original insurance portfolio's technical provisions.

The guaranteed interest for the segregated group pension policies is mainly 3.5 per cent. More important from the risk management point of view is that the discount rate of liabilities is 0.75 per cent. The discount rate was decreased on 31 December 2015 from 1.0 per cent to 0.75 per cent which increased the reserve for decreased discount rate to EUR 257 million (EUR 241 million in 2014). The reserve for future bonuses has an important role in the risk management of the segregated group pension portfolio. The reserve amounts to EUR 157 million and EUR 145 million of it can be used to cover possible investment losses or to finance possible changes in the discount rate of segregated 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, 2015. The table also shows the change in each category during 2015.

## Analysis of the Change in Provisions before Reinsurance

### Mandatum Life, 2015

EURm	Liability 2014	Premiums	Claims paid	Expense charges	Guaranteed interest	Bonuses	Other	2015	Share %
<b>Mandatum Life parent company</b>									
<b>Unit-linked total</b>	<b>5,159</b>	<b>938</b>	<b>-531</b>	<b>-63</b>	<b>0</b>	<b>0</b>	<b>200</b>	<b>5,703</b>	<b>52</b>
Individual pension insurance	1,149	72	-11	-15	0	0	53	1,248	11
Individual life	1,826	406	-167	-19	0	0	56	2,104	19
Capital redemption operations	1,677	385	-350	-22	0	0	88	1,779	16
Group pension	507	75	-4	-8	0	0	2	573	5
<b>With profit and others total</b>	<b>5,047</b>	<b>177</b>	<b>-443</b>	<b>-37</b>	<b>152</b>	<b>0</b>	<b>101</b>	<b>4,996</b>	<b>46</b>
<b>Group pension</b>	<b>2,248</b>	<b>54</b>	<b>-194</b>	<b>-7</b>	<b>77</b>	<b>1</b>	<b>2</b>	<b>2,180</b>	<b>20</b>
Guaranteed rate 3,5%	2,109	26	-180	-5	73	0	-13	2,010	18
Guaranteed rate 2,5%, 1,5% or 0,0%	139	27	-14	-2	4	0	15	170	2
<b>Group pension insurance, segregated portfolio</b>	<b>1,228</b>	<b>12</b>	<b>-57</b>	<b>-1</b>	<b>27</b>	<b>0</b>	<b>-12</b>	<b>1,196</b>	<b>11</b>
Basic liabilities, guaranteed rate 3,5%	805	12	-57	-1	27	0	-4	782	7
Reserve for decreased discount rate (3,5% -> 0,75%)	241	0	0	0	0	0	15	257	2
Future bonus reserves	181	0	0	0	0	0	-24	157	1
<b>Individual pension insurance</b>	<b>1,038</b>	<b>14</b>	<b>-146</b>	<b>-5</b>	<b>42</b>	<b>0</b>	<b>30</b>	<b>973</b>	<b>9</b>
Guaranteed rate 4.5%	836	9	-104	-4	36	0	-4	770	7
Guaranteed rate 3.5%	150	3	-25	-1	5	0	10	142	1
Guaranteed rate 2.5% or 0.0%	52	2	-17	-0	1	0	24	61	1
<b>Individual life insurance</b>	<b>218</b>	<b>32</b>	<b>-34</b>	<b>-10</b>	<b>7</b>	<b>0</b>	<b>-16</b>	<b>197</b>	<b>2</b>
Guaranteed rate 4.5%	67	5	-9	-1	3	0	-3	61	1
Guaranteed rate 3.5%	100	10	-11	-3	3	0	-7	93	1
Guaranteed rate 2.5% or 0.0%	51	17	-14	-6	1	0	-5	44	0
<b>Capital redemption operations</b>	<b>4</b>	<b>30</b>	<b>-0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>36</b>	<b>0</b>
Guaranteed rate 3.5%	0	0	0	0	0	0	0	0	0
Guaranteed rate 2.5% or 0.0%	4	30	-0	0	0	0	1	36	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>135</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>109</b>	<b>244</b>	<b>2</b>
<b>Longevity reserve</b>	<b>108</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-2</b>	<b>106</b>	<b>1</b>
<b>Assumed reinsurance</b>	<b>2</b>	<b>2</b>	<b>-0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-2</b>	<b>2</b>	<b>0</b>
<b>Other liabilities</b>	<b>66</b>	<b>33</b>	<b>-11</b>	<b>-13</b>	<b>0</b>	<b>0</b>	<b>-12</b>	<b>63</b>	<b>1</b>
<b>Mandatum Life parent company total</b>	<b>10,207</b>	<b>1,115</b>	<b>-974</b>	<b>-100</b>	<b>153</b>	<b>1</b>	<b>299</b>	<b>10,699</b>	<b>98</b>
<b>Subsidiary SE Sampo Life Insurance Baltic</b>	<b>170</b>	<b>34</b>	<b>-27</b>	<b>-3</b>	<b>1</b>	<b>0</b>	<b>-1</b>	<b>173</b>	<b>2</b>
Unit-linked liabilities	153	30	-25	-3	0	0	-0	155	1
Other liabilities	17	3	-2	-1	1	0	-1	18	0
<b>Mandatum Life group total</b>	<b>10,377</b>	<b>1,149</b>	<b>-1,001</b>	<b>-104</b>	<b>153</b>	<b>0</b>	<b>298</b>	<b>10,873</b>	<b>100</b>

The unit-linked business has been Mandatum Life's main focus area since 2001. Since then the trend of unit-linked technical provisions has been upward and the average annual change in unit-linked technical provisions has been 24 per cent per annum. Due to the nature of unit-linked business, volatility between the

years is relatively high.

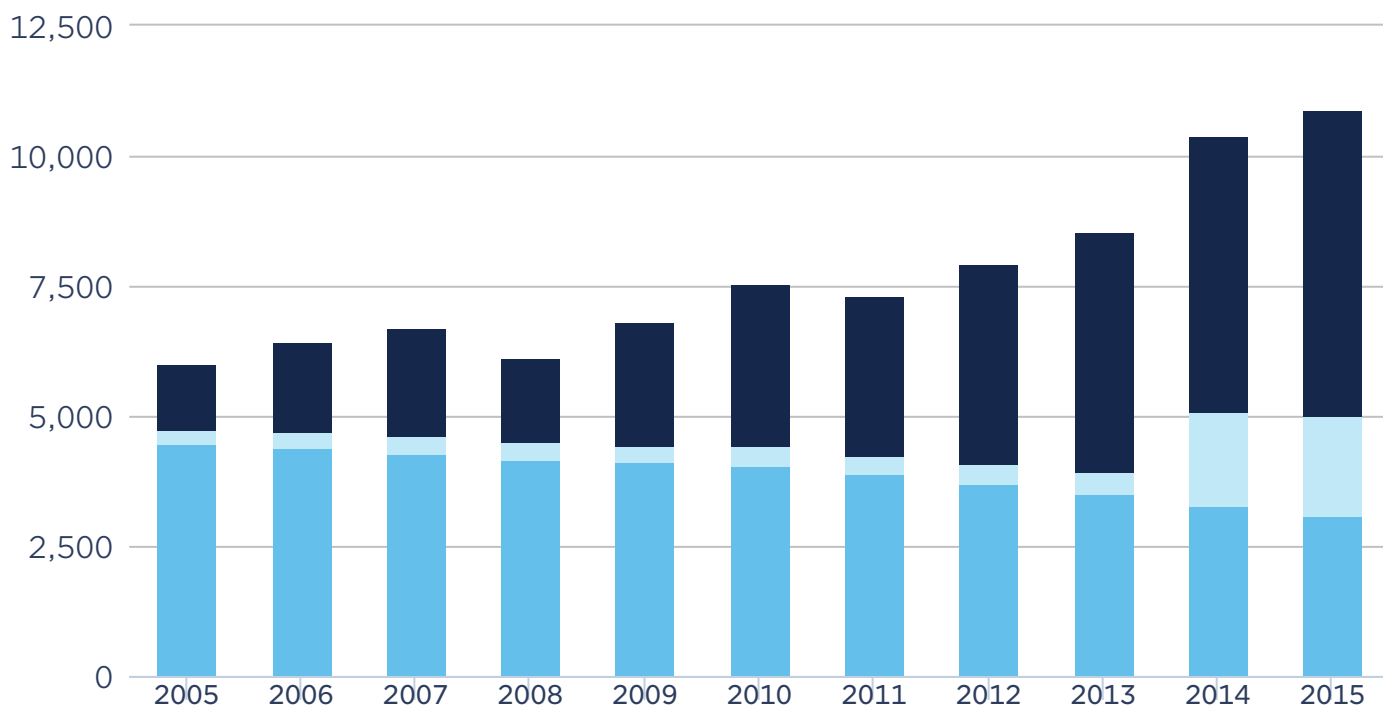
In contrast, the trend of original with profit technical provisions has been downward since 2005. In particular, the parts of technical provisions with the highest 4.5 per cent and 3.5 per cent guarantees have

decreased. The technical provisions with the highest guarantees fell by EUR 188 million. In total the with profit technical provisions decreased modestly, only EUR 51 million to the level of EUR 5,014 million, due to the set reserves.

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, 2005-2015.

### Development of With Profit and Unit-linked Technical Provisions Mandatum Life, 2005-2015

EURm



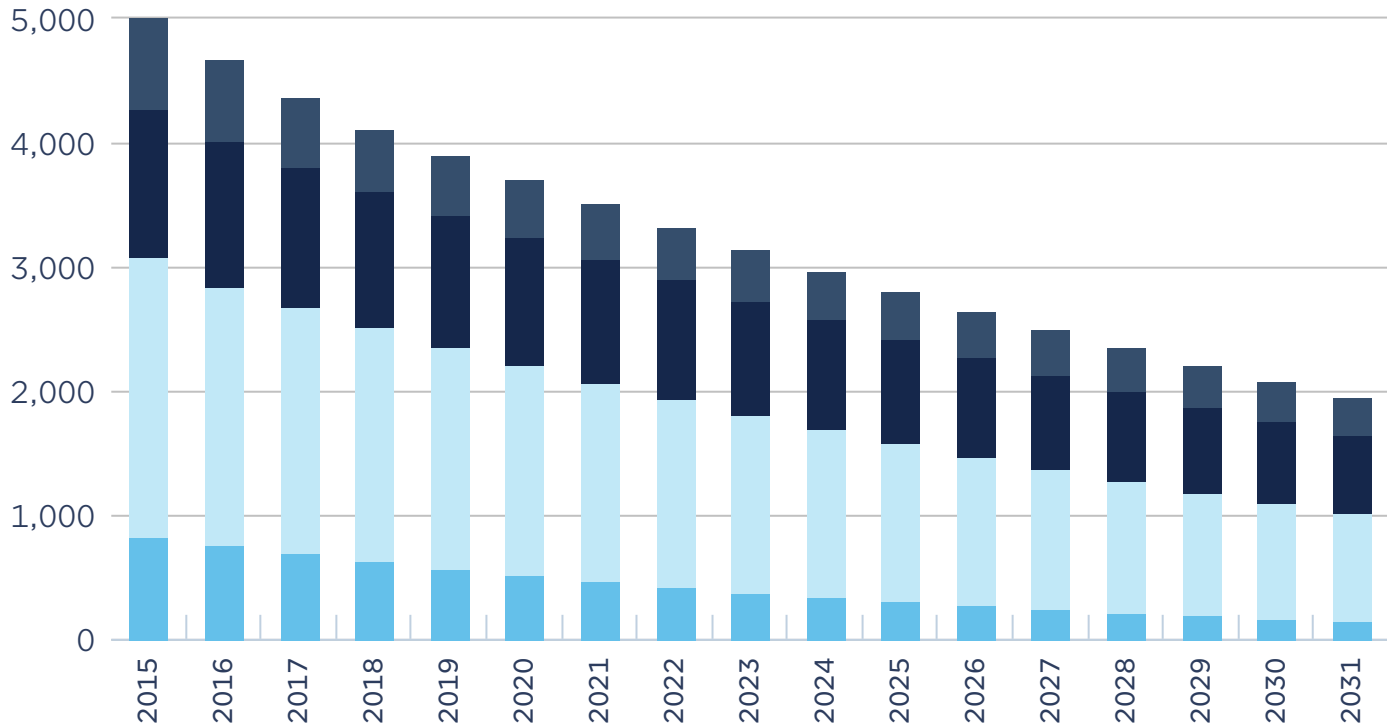
- Unit-Linked
- Other With Profit
- With Profit (3.5-4.5% guarantees)

The decreasing trend of with profit liabilities is expected to continue, liabilities with the highest guarantees are expected to decrease from EUR 3,100 million to around EUR 1,000 million during the Solvency II transitional period of the technical

provision (1 January 2016-31 December 2031). The figure Forecast of With Profit Liabilities, 31 December 2015-31 December 2031 shows the expected trend of existing with profit liabilities.

### Forecast of With Profit Liabilities 31 December 2015–31 December 2031

EURm



- Segregated Group Pension
- Other With Profit Liabilities (excl. Segregated Group pension)
- With Profit Liabilities (3,5% guarantee)
- With Profit Liabilities (4,5% guarantee)

The table Expected Maturity of Insurance and Investment Contracts before Reinsurance, Mandatum Life, 31 December 2015 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 2015

EURm	Duration	2016-2017	2018-2019	2020-2024	2025-2029	2030-2034	2035-2039	2040-
<b>Mandatum Life parent company</b>								
<b>Unit-linked liabilities total</b>	<b>8.4</b>	<b>1,089</b>	<b>840</b>	<b>1,560</b>	<b>1,057</b>	<b>800</b>	<b>313</b>	<b>402</b>
Individual pension insurance	10.8	148	136	295	247	196	141	157
Individual life	7.9	437	310	594	377	331	98	97
Capital redemption operations *)	6.7	453	332	527	328	198	21	63
Group pension	11.3	51	62	144	104	75	53	85
<b>With Profit and other liabilities total</b>	<b>9.4</b>	<b>1136</b>	<b>844</b>	<b>1519</b>	<b>1071</b>	<b>754</b>	<b>513</b>	<b>739</b>
<b>Group pension</b>	<b>10.8</b>	<b>366</b>	<b>338</b>	<b>697</b>	<b>527</b>	<b>393</b>	<b>284</b>	<b>434</b>
Guaranteed rate 3.5%	10.8	339	317	658	496	368	265	399
Guaranteed rate 2.5%, 1.5% or 0.0%	11.4	27	20	39	30	25	19	35
<b>Group pension insurance, segregated portfolio</b>	<b>10.7</b>	<b>174</b>	<b>161</b>	<b>352</b>	<b>278</b>	<b>209</b>	<b>145</b>	<b>188</b>
<b>Individual pension insurance</b>	<b>6.8</b>	<b>301</b>	<b>238</b>	<b>360</b>	<b>190</b>	<b>95</b>	<b>46</b>	<b>64</b>
Guaranteed rate 4.5%	6.9	222	180	292	155	74	34	53
Guaranteed rate 3.5%	6.5	50	35	45	26	16	8	7
Guaranteed rate 2.5% or 0.0%	5.6	29	23	23	9	5	3	4
<b>Individual life insurance</b>	<b>9.3</b>	<b>55</b>	<b>35</b>	<b>65</b>	<b>43</b>	<b>32</b>	<b>22</b>	<b>33</b>
Guaranteed rate 4.5%	8.9	17	13	23	14	11	7	9
Guaranteed rate 3.5%	10.6	21	15	29	22	16	12	21
Guaranteed rate 2.5% or 0.0%	7.1	16	7	13	8	5	3	3
<b>Capital redemption operations *)</b>	<b>8.0</b>	<b>3</b>	<b>11</b>	<b>5</b>	<b>6</b>	<b>5</b>	<b>2</b>	<b>1</b>
Guaranteed rate 3.5%	0.0	0	0	0	0	0	0	0
Guaranteed rate 2.5% or 0.0%	8.0	3	11	5	6	5	2	1
<b>Future bonus reserves</b>	<b>1.0</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>2.4</b>	<b>167</b>	<b>48</b>	<b>14</b>	<b>8</b>	<b>4</b>	<b>2</b>	<b>3</b>
<b>Longevity reserve</b>	<b>11.8</b>	<b>10</b>	<b>10</b>	<b>23</b>	<b>19</b>	<b>16</b>	<b>12</b>	<b>17</b>
<b>Assumed reinsurance</b>	<b>0.5</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Other liabilities</b>	<b>0.9</b>	<b>57</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Mandatum Life Parent Company total</b>	<b>8.9</b>	<b>2,225</b>	<b>1,684</b>	<b>3,078</b>	<b>2,128</b>	<b>1,554</b>	<b>826</b>	<b>1,141</b>
<b>Subsidiary Se Sampo Life Insurance Baltic</b>								
Unit-linked liabilities		15	22	38	18	34	21	49
Other liabilities		4	3	6	2	1	0	0
<b>Mandatum Life group total</b>		<b>2,240</b>	<b>1,706</b>	<b>3,117</b>	<b>2,145</b>	<b>1,588</b>	<b>847</b>	<b>1,190</b>

\* Investment contracts

## Life Insurance Risk Management

In general biometric risks are managed by careful risk selection, by setting prices to reflect the risks and costs, by setting upper limits for the protection granted and by use of reinsurance. Mandatum Life's Underwriting Policy sets principles for risk selection

and limits for sums insured and the Reinsurance Policy governs the use of Reinsurance. The Board approves the Underwriting policy, Reinsurance Policy, pricing guidelines and the central principles for the calculation of technical provisions.

The Insurance Risk Committee is responsible for maintaining the Underwriting Policy and monitoring the functioning of the risk selection and claims processes. The Committee also reports all deviations from the Underwriting Policy to the RMC. The Insurance Risk Committee is chaired by the Chief Actuary who is responsible for ensuring that the principles for pricing policies and for the calculation of technical provisions are adequate and in line with the risk selection and claims processes.

Reinsurance is used to limit the amount of individual mortality and disability risks. The Board of Directors annually approves the Reinsurance Policy and determines the maximum amount of risk to be retained on the company's own account. The highest retention of Mandatum Life is EUR 1.5 million per insured. Mandatum Life has catastrophe cover to mitigate the effect of possible catastrophes.

The risk result is followed actively and thoroughly analyzed annually. Mandatum Life measures the efficiency of risk selection and the 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 supplemental needs are assessed regularly. Assumptions related to technical provisions are reviewed annually. The adequacy of the 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.