

Underwriting Risks and Performance

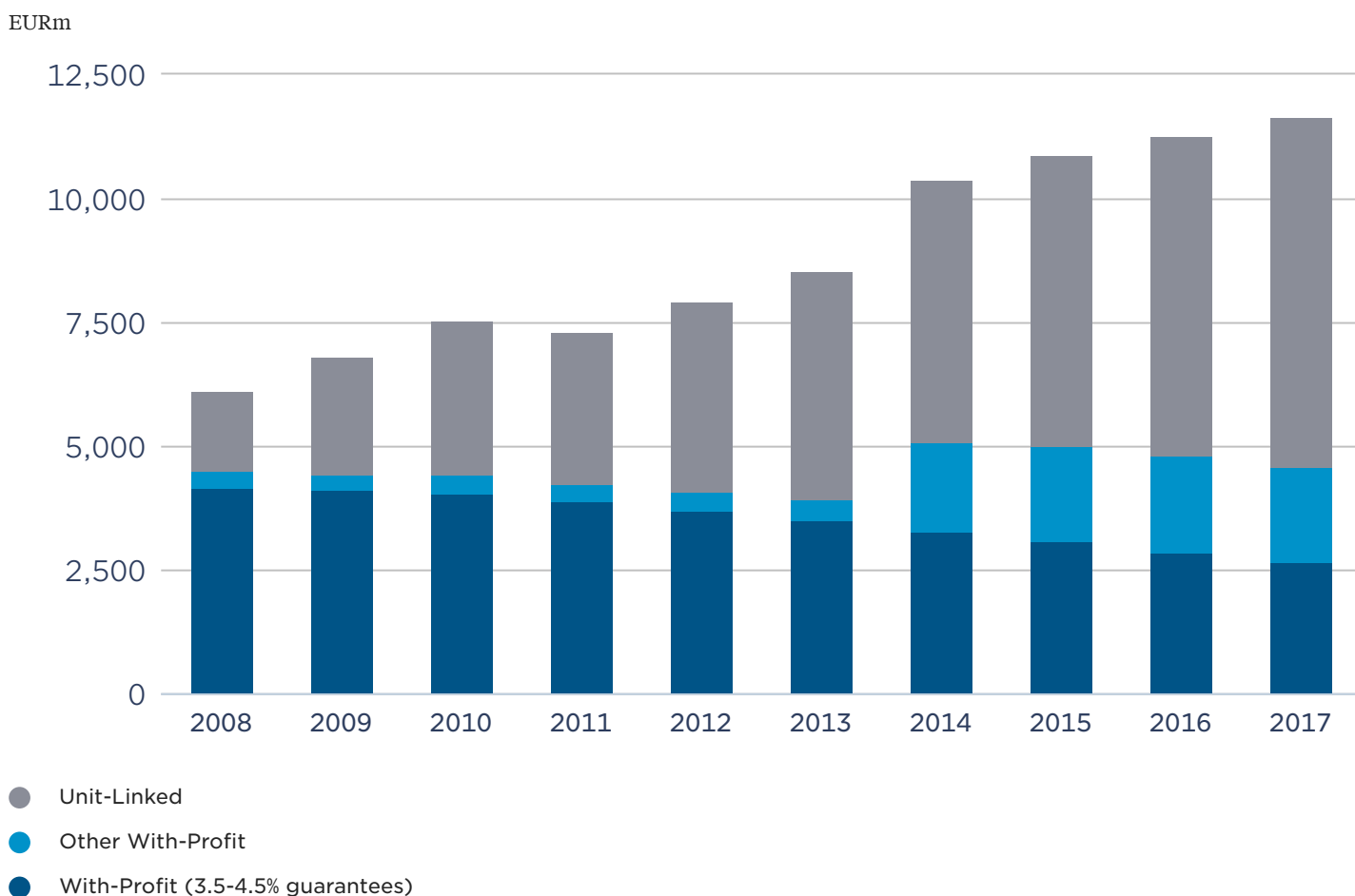
In this section the underwriting risks and performance as well as the development of technical provisions are presented. Further details of technical provisions can be found in [Appendix 5 \(Valuation for solvency purposes\)](#).

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 growth in unit-linked technical provisions has been over 20 per cent per annum. Due to the nature of the unit-linked business, volatility between the years has been relatively high. Around EUR 3,100 million of current unit-linked liabilities totaling EUR 7,066 million were sold through Danske Bank. These liabilities, together with around EUR

200 million of with profit liabilities, will be transferred to Danske Bank A/S. Transfer date is expected to be before year end 2018.

In contrast to the unit-linked trend, the trend of with profit technical provisions has been downward since 2005 (with the exception of year 2014 when group pension portfolio from Suomi Mutual was transferred to Mandatum Life). In particular, the parts of technical provisions with the highest guarantees (4.5 per cent and 3.5 per cent) have decreased. The development of with profit and unit-linked portfolios is presented in the figure Development of With Profit and Unit-linked Technical Provisions, Mandatum Life, 2008–2017.

**Development of With Profit and Unit-Linked Technical Provisions
Mandatum Life, 2008–2017**



The above mentioned group pension portfolio transferred from Suomi Mutual and related assets are separated from the rest of the Mandatum Life balance sheet into a segregated group pension portfolio. The segregated group pension

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

liabilities.

During the year 2017 insurance liabilities developed as planned. Unit-linked business increased and with profit liabilities with the highest guarantees decreased. The technical provisions with the highest guarantees fell by EUR 226 million. In total the with profit technical provisions

decreased by EUR 248 million and is EUR 4,573 million due to increased discount rate reserves.

The development of insurance liabilities during 2017 is shown in the table Analysis of the Change in Provisions before Reinsurance, Mandatum Life, 2017.

Analysis of the Change in Provisions before Reinsurance Mandatum Life, 31 December 2017

EURm	Liability 2016	Premiums	Claims paid	Expense charges	Guaranteed interest	Bonuses	Other	Liability 2017	Share %
Mandatum Life									
Unit-linked, excl. Baltic	6,279	827	-544	-70	0	2	407	6,901	59%
Individual pension insurance	1,313	60	-18	-15	0	0	69	1,411	12%
Individual life	2,346	243	-219	-22	0	0	143	2,491	21%
Capital redemption operations	1,977	454	-304	-25	0	0	130	2,231	19%
Group pension	643	71	-4	-9	0	2	65	768	7%
With profit and others, excl. Baltic	4,804	116	-452	-35	131	1	-7	4,558	39%
Group pension insurance, segregated portfolio	1,142	4	-59	-1	24	0	-45	1,065	9%
Basic liabilities, guaranteed rate 3.5%	715	4	-59	-1	24	0	5	687	6%
Reserve for decreased discount rate (3.5% -> 0.50%)	275	0	0	0	0	0	-14	261	2%
Future bonus reserves	153	0	0	0	0	0	-36	117	1%
Group pension	2,117	35	-208	-6	67	1	-9	1,997	17%
Guaranteed rate 3.5%	1,885	4	-179	-3	64	0	-27	1,744	15%
Guaranteed rate 2.5%, 1.5% or 0.0 %	232	31	-29	-3	4	0	18	253	2%
Individual pension insurance	899	10	-139	-5	33	0	26	825	7%
Guaranteed rate 4.5%	695	6	-86	-4	28	0	-16	624	5%
Guaranteed rate 3.5%	137	3	-27	-1	4	0	17	134	1%
Guaranteed rate 2.5% or 0.0%	67	1	-27	0	1	0	26	67	1%
Individual life insurance	180	32	-33	-10	6	0	-12	162	1%
Guaranteed rate 4.5%	58	4	-6	-1	3	0	-4	54	0%
Guaranteed rate 3.5%	86	10	-11	-3	3	0	-5	80	1%
Guaranteed rate 2.5% or 0.0%	35	18	-16	-6	0	0	-3	28	0%
Capital redemption operations	28	0	-2	0	0	0	0	26	0%
Guaranteed rate 3.5%	0	0	0	0	0	0	0	0	0%
Guaranteed rate 2.5% or 0.0%	28	0	-2	0	0	0	0	26	0%
Future bonus reserves	0	0	0	0	0	0	0	0	0%
Reserve for decreased discount rate	273	0	0	0	0	0	52	325	3%
Longevity reserve	105	0	0	0	0	0	0	105	1%
Assumed reinsurance	2	1	-1	0	0	0	-2	1	0%
Other liabilities	59	34	-11	-13	0	0	-18	51	0%
Total, excl. Baltic	11,083	943	-996	-104	131	2	399	11,459	98%
Baltic	178	24	-27	-3	1	0	6	180	2%
Unit-linked liabilities	161	21	-23	-2	0	0	9	165	1%
Other liabilities	17	3	-3	0	1	0	-2	15	0%
Mandatum Life group total	11,261	967	-1,023	-107	132	2	406	11,638	100%

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. Mandatum Life has sold policies with lower guaranteed rates as well but their share is small.

With respect to with profit policies with the 4.5 per cent

guaranteed rate, the maximum discount rate used when discounting technical provisions has been decreased to 3.5 per cent over the lifetime of these policies. As a result, technical provisions were supplemented by a reserve of EUR 43 million at the end of 2017 (EUR 48 million in 2016).

In addition, there are reserves for years 2017-2021 to lower interest rates of with profit liabilities as follows:

- EUR 264 million has been reserved to lower the interest rate to 0.25 per cent for years 2018-2020; and
- EUR 18 million for the year 2021 to lower the interest rate to 2.75 per cent.

In total, Mandatum Life has set up an extra reserve of EUR 325 million as part of the original insurance portfolio's technical provisions.

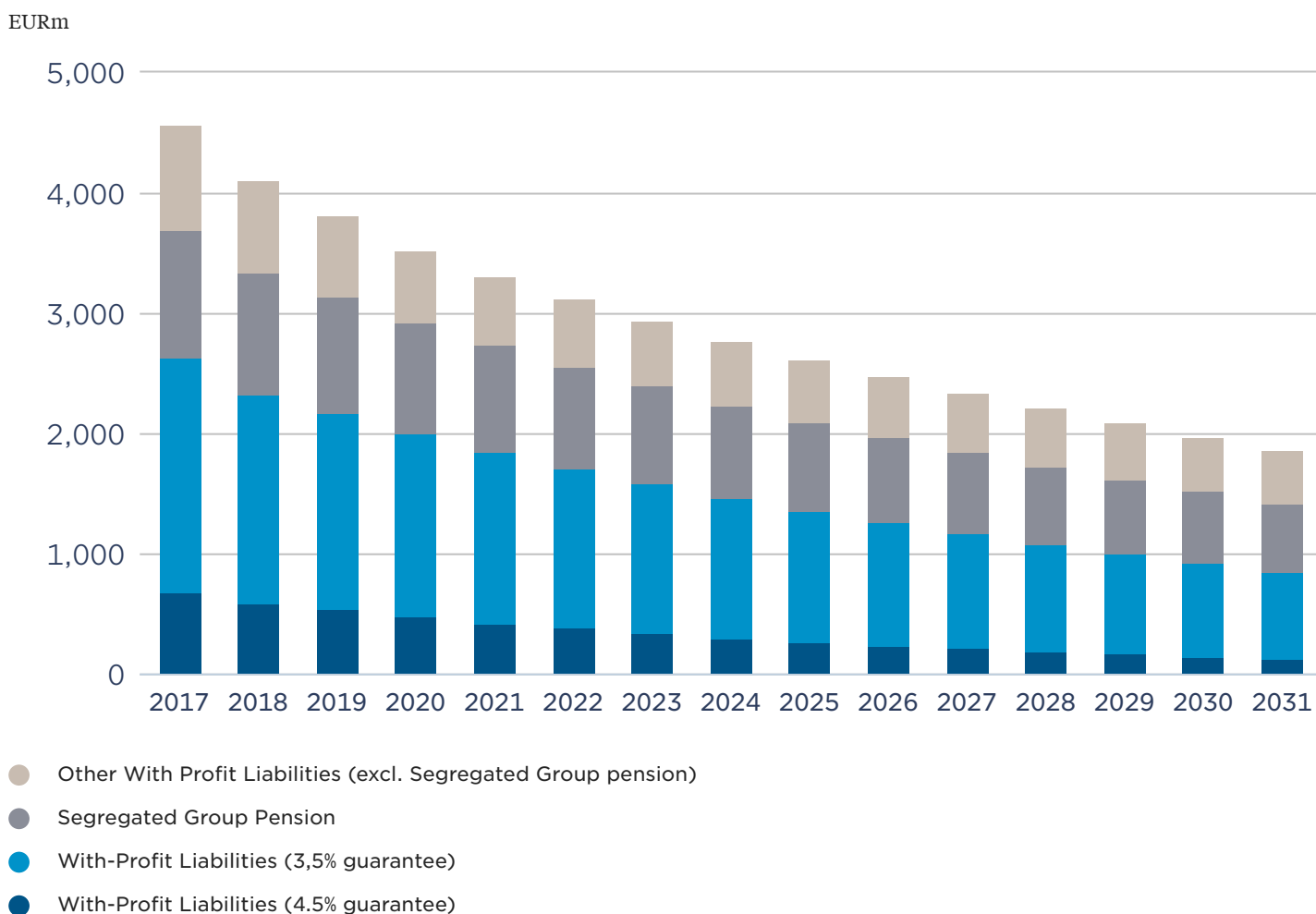
The guaranteed interest for the segregated group pension policies is mainly 3.5 per cent. More important from a risk management point of view is that the discount rate of

liabilities is 0.50 per cent and related discount rate reserve EUR 261 million (275). The future bonus reserve has an important role in the risk management of the segregated group pension portfolio. The reserve amounts to EUR 117 million, which can be used to cover possible investment losses or to finance possible changes in the discount rate of segregated technical provisions.

The decreasing trend of with profit liabilities is expected to continue. Liabilities with the highest guarantees and highest capital consumption are expected to decrease from EUR 2,635 million to below EUR 900 million during the remaining Solvency II transitional period of the technical provision (1 January 2018–31 December 2031). Duration of segregated group pension portfolio is around 11 years and duration of original with profit portfolio is around 10 years.

The figure Forecast of With Profit Liabilities, 31 December 2017–31 December 2031 shows the expected trend of existing with profit liabilities.

Forecast of With Profit Liabilities
Mandatum Life, 31 December 2017-31 December 2031



Biometric Risks

Mandatum Life's main biometric risks are longevity, mortality and disability. In general the long duration of policies and restriction of Mandatum Life's right to change policy terms and conditions and tariffs increases biometric risks. A definition of the biometric risk can be found in [Appendix 2 \(Risk Definitions\)](#). If the premiums turn out to be inadequate and cannot be increased, technical provisions have to be supplemented by an amount corresponding to the increase in expected losses.

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, almost 70 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 2017 technical provision by EUR 105 million (105) 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 2017 was EUR 6.8 million (2.9).

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 vary 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 table Claim Ratios after Reinsurance, Mandatum Life, 2017 and 2016 shows the insurance risk result in Mandatum Life's Finnish life insurance policies. The ratio of the actual to expected claims costs was 76 per cent in 2017 (79). 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 12 million to EUR 24 million.

Claim Ratios After Reinsurance Mandatum Life, 2017 and 2016

EURm	2017			2016		
	Risk income	Claim expense	Claim ratio	Risk income	Claim expense	Claim ratio
Life insurance	47.6	23.5	49%	43.2	21.2	49%
Mortality	29.0	12.0	41%	24.8	11.8	48%
Morbidity and disability	18.6	11.5	62%	18.4	9.4	51%
Pension	85.6	77.5	91%	80.8	76.2	94%
Individual pension	12.8	13.5	105%	12.0	12.8	107%
Group pension	72.8	64.0	88%	68.8	63.4	92%
Mortality (longevity)	68.2	61.4	90%	63.9	61.0	95%
Disability	4.6	2.6	57%	4.9	2.4	49%
Mandatum Life	133.2	101.0	76%	124.0	97.4	79%

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

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. 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 underwriting and claims management 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.

Policyholder Behavior and Expense Risks

From an Asset and Liability Management point of view surrender risk is not material 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. Surrender risk is therefore only relevant in individual life and capital redemption policies of which the related technical provisions amounts to less than 5 per cent (below EUR 200 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. Due to the limited surrender risk, the future cash flows of Mandatum Life's insurance liabilities are quite predictable.

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 effective and competitive level. In year 2017, the expense result of Mandatum Life Group was EUR 33 million (26). Mandatum Life does not defer insurance acquisition costs. Since 2012 the expense result has grown significantly, especially due to increased fee income from unit-linked business, as presented in the table Expense result, Mandatum Life Group, years 2008-2017.

Expense Result Mandatum Life Group, years 2008-2017

Year	Expense result, EURm
2017	33.2
2016	26.1
2015	26.8
2014	19.6
2013	15.3
2012	6.8
2011	9.8
2010	7.8
2009	5.2
2008	7.3