Underwriting Risks

In general, the book value of insurance liabilities (technical provisions) and economic value of insurance liabilities are dependent on (i) the size and timing of future claims payments including expenses and (ii) the interest rates used to discount these claims payments to the current date.

The first component is source of underwriting risk and second component is affecting the interest rate risk of total balance sheet.

Underwriting risk can be generally defined as a change in the value of insurance liabilities which is caused by the final costs for full contractual obligations varying from those assumed when these obligations were estimated. Hence, underwriting risk is realized as unexpected liability cash flows or unexpected change in the value of insurance liabilities when the pricing and provisioning assumptions on claims payments differ to the actual payments.

Technical provisions and the economic value of insurance liabilities always include a degree of uncertainty as they are based on estimates of the size, timing and the frequency of future claim payments. The uncertainty is normally greater for new portfolios for which comprehensive run off statistics are not yet available, and for portfolios which include claims that take a long time to settle. Workers' Compensation ("WC"), Motor Third Party Liability ("MTPL"), Personal Accident and Liability insurance are examples of non-life products with the latter characteristics. In principle most of the Life products are embedding the latter characteristics as well. Life insurance policies are also exposed to the behaviour of policyholders, because policyholders can change their premium payment intensity or cancel the existing policy.

Non-life Insurance Underwriting Risks

Non-life insurance underwriting risks are often divided into premium and catastrophe risks and reserve risk in order to separate the risks related to future claims of current insurance contracts and already incurred claims.

Non-life Insurance Underwriting Risks

External drivers
Technical & medical innovations, changes in climate, natural disasters, economic environment, inflation, laws & regulations

Changes in the timing, frequency or severity of fires, motor accidents, windstorms, floods, thefts and other insured events

Changes in longevity, inflation components, latent factors and precedents etc.

Premium and catastrophe risks

Changes in expected liability cash flows resulting from:

- Size and/or frequency of future claims related to unexpired contracts being greater than expected
- Timing of future claims payments related to unexpired contracts differs from expected.

Reserve risk

Changes in expected liability cash flows resulting from:

- Size of claims payments related to already incurred claims being greater than expected
- Timing of claims payments differs from expected.

Changes in economic value of liabilities and technical provisions

Changes in market interest rates and regulatory discount rates

Premium Risk and Catastrophe Risk

Premium risk relates to future claims resulting from expected insured events which have not occurred at the balance sheet date. The frequency, severity and timing of insured events and hence future claims may differ from those expected. As a result, the claims cost for future claims exceeds the expected level and there is a loss or adverse changes in the value of the insurance liabilities.

Catastrophe risk can be seen as an extreme case of premium risk. It is the risk of extreme or exceptional events, such as natural catastrophes where the pricing and setting of provisioning assumptions include significant uncertainty. These events may lead to significant deviations between the actual claims and the total expected claims resulting into a loss or adverse changes in the value of insurance liabilities.

Reserve Risk

Reserve risk relates to incurred claims, resulting from insured events which have occurred at or prior to the

balance sheet date. The final amount, frequency and timing of claims payments may differ from those originally expected. As a result technical provisions are not sufficient to cover the cost for already incurred claims and there is a loss or adverse changes in the value of insurance liabilities.

Reserve risk includes **revision** risk, which is defined as the risk of loss, or of adverse change in the value of insurance and reinsurance liabilities, resulting from fluctuations in the level, trend, or volatility of revision rates applied to annuities, due to changes in the legal environment or in the state of health of the person insured.

Life Insurance Underwriting Risks

The value of life insurance liabilities is sensitive to underwriting risks and discount rate risk in technical provisions. Underwriting risk includes biometric, policyholder behavior and expense risks as presented in the picture Life Insurance Underwriting Risks.

Life Insurance Underwriting Risks

External drivers

Emerging infectious diseases, medical innovations, natural disasters, changes in lifestyles, economic environment, laws, taxation and regulations

Changes in longevity, mortality, morbidity and disability, or inaccuracy of used models	Changes in policyholders' behavior	Changes in general expenses and/or direct underwriting costs
Biometric risks	**Policyholder behavior risks**	**Expense risk**
Changes in expected liability cash flows resulting from: • Actual pensions are being paid for a longer time than expected. • Actual mortality, disability or morbidity rate is greater than expected.	**Changes in expected liability cash flows resulting from:** • Actual rate of policy lapses differs from expected. • Rate of actual surrenders differs from expected.	**Changes in expected liability cash flows resulting from:** • Amount of expenses incurred is greater than expected. • Timing of expenses incurred is earlier than expected.

Changes in economic value of liabilities and technical provisions

Changes in market interest rates and regulatory discount rates

Biometric Risks

Biometric risks refer 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 policy holders for a longer period (longevity risk) than expected originally when pricing the policy.

In life insurance, catastrophe events include – as in non-life insurance – rare single events or a series of events, usually over a short period of time and, albeit

even less frequently, longer lasting events. When a low frequency, high severity event or series of single events lead to a significant deviation in actual benefits and payments from the total expected payments, a catastrophe risk, i.e. an extreme case of biometric risk, has been realized.

Policyholder Behaviour and Expense Risks

Policyholder behaviour risks arise from the uncertainty related to the behaviour of policyholders. The policyholders have the right to cease paying premiums (lapse risk) and may have a possibility to interrupt their policies (surrender risk).

The company is also exposed to expense risk, which arises from the fact that the timing and/or the amount of expenses incurred differs from those expected at the time of pricing. As a result, expense charges originally assumed may not be enough to cover the realized expenses.

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.