

Valuing Insurance Liabilities for Market Adjusted Valuation with Cost of Capital Margin over Current Estimate

Lutz Wilhelmy, Swiss Re & SAV, IAIS Stakeholder Meeting, 5 Dec 2017

In a nutshell

Given firstly market adjusted valuation, i.e.

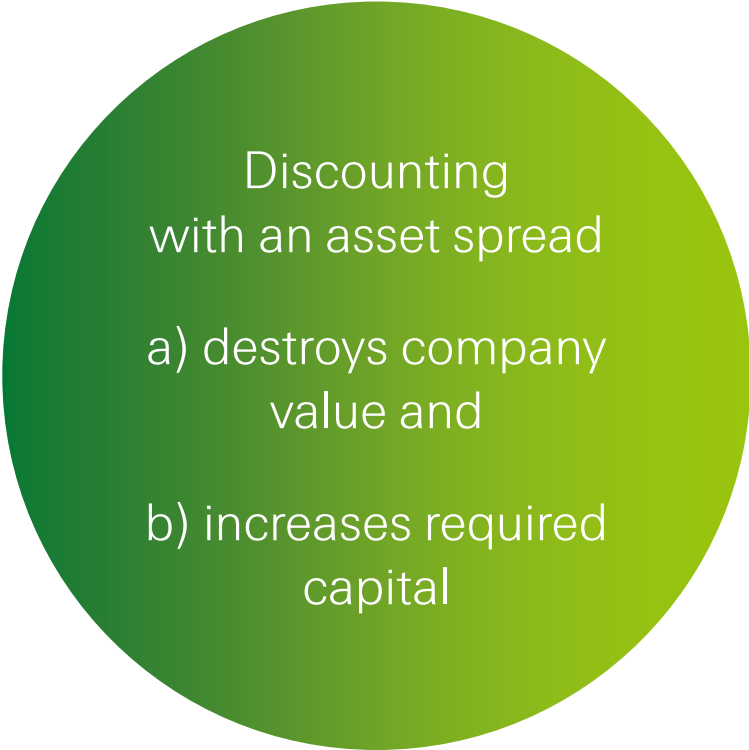
- production of insurance liabilities by matching fixed income instruments and
- adding the cost to indemnify investors to provide the necessary capital during the run-off of the liabilities to ascertain policy holders with the desired protection,

and given secondly

- that investors are asking market returns for credit default risk

then the value of liabilities is minimal using risk free instruments to match.

This means risk free liability discounting is optimising corporate value.



Discounting
with an asset spread

a) destroys company
value and

b) increases required
capital

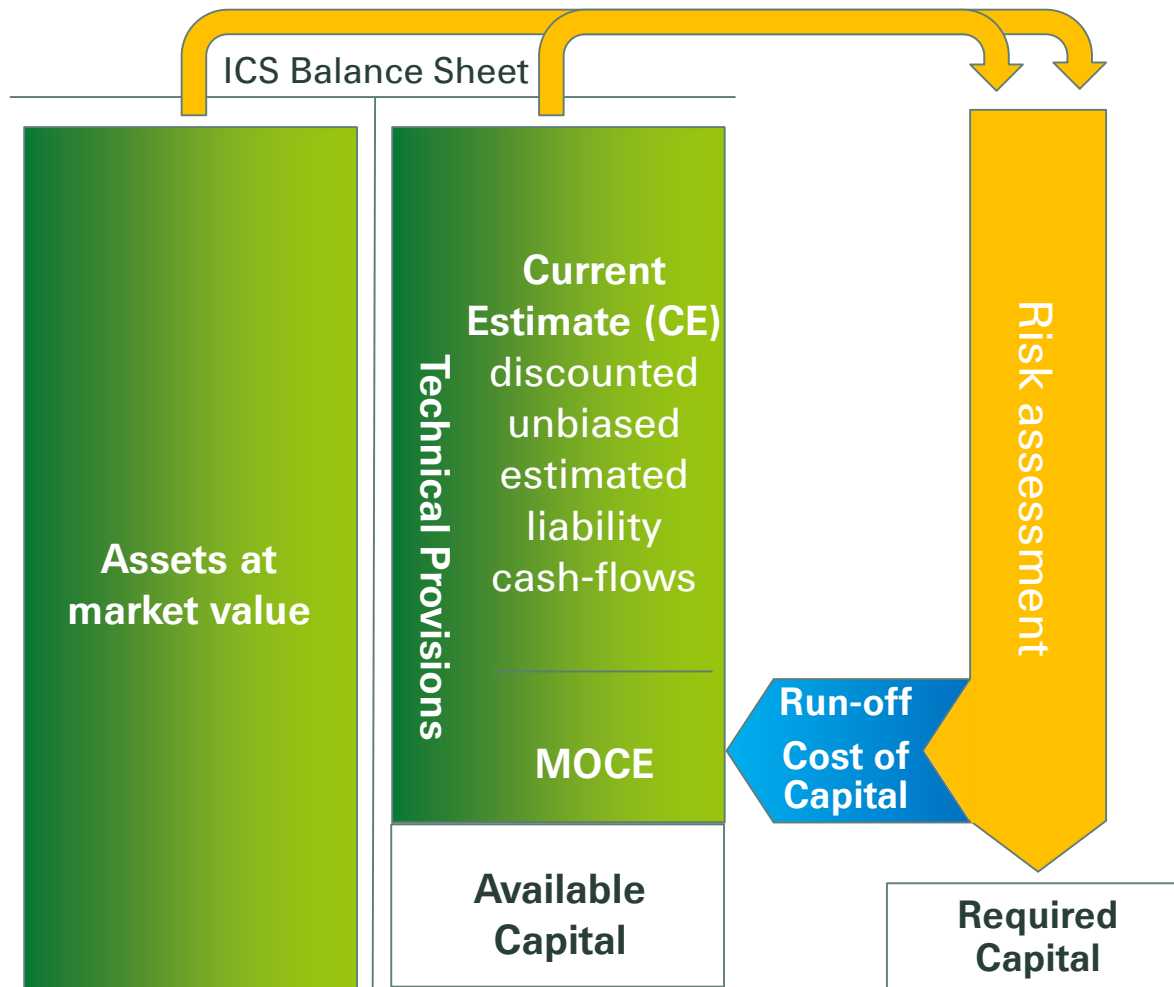
This is like a theorem. The rest of the talk gives the proof.

Table of contents

- In a nutshell
- Current Estimate and its Risk
- Margin Over Current Estimate – MOCE
- Required Capital

Current Estimate and its Risk

ICS: value, risk, available capital and required capital



- Discounting with a spread means matching / producing with default prone assets.
- The Current Estimate decreases.
- But, there is additional default risk:
 - The MOCE increases.
 - Required Capital changes – decreases, because the credit spread risk of the assets disappears and increases, because MOCE is increasing.

What is the bottom line impact on technical provisions and required capital?

Matching future expected cash-flows for Current Estimate

future cash flows
are subject to
no risk

risk free
assets

insurance
liabilities

future cash flows
are subject to
insurance risk

Discounting liabilities with
risk free rates –
MOCE needs to cater for
insurance risk only
over the lifetime of liabilities

future cash flows
are subject to
credit default risk

credit
default
prone
assets

insurance
liabilities

future cash flows
are subject to
insurance risk

Discounting liabilities with a
spread above risk free rates –
MOCE needs to cater for
**insurance risk and for
credit default risk**
over the lifetime of liabilities

Aside: insurance risk vs. default risk – societal tolerance

- Insurance risk is mainly
 - idiosyncratic
 - not too fat-tailed
 - well-diversifying, if managed well
 - none-cyclical
- Risk tolerance for policy holder protection: 1/200 years
- Risk Tolerance for systemic financial stability: irrelevant

- Default risk is mainly
 - systematic
 - fat-tailed
 - badly diversifying
 - pro-cyclical
- Risk tolerance and cost for policy holder protection: to be discussed here
- Risk tolerance for systemic financial stability: relevant, but not discussed here

- Up to now, the field tests of ICS V1.0 have implemented the risk tolerance to default risk by “guardrail” constraints – however, ICS V1.0 does not attempt to measure and properly allocate corresponding costs.
- This talk deals with cost for the insurer and its policy holders – it does not deal with the equally important question of the cost and tolerance of society for systemic risk.

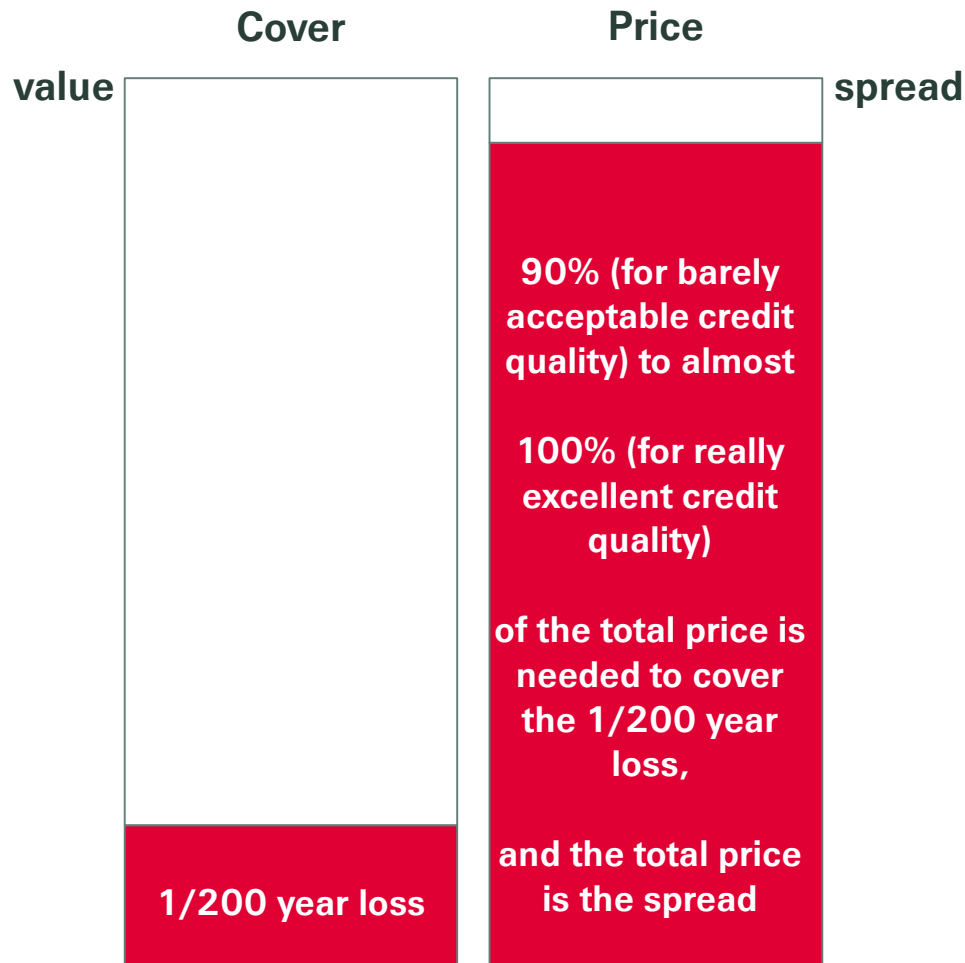
MOCE

Margin Over Current Estimate

MOCE is the cost to make run-off risk acceptable for policy holders over the lifetime of liabilities

- MOCE is the balance sheet reserve for the cost to indemnify investors for providing risk bearing capital to make run-off risk acceptable to policy holder over the lifetime of liabilities
- How much capital is needed in each year to make run-off risk acceptable?
 - In each run-off year, the 1/200 year event must be covered, i.e. the insurance risk and the default risk in that year need to be aggregated and the 99.5% VaR is the required capital for that year.
- What is the costs of holding capital for this risk? The investor will ask for an additional return on his investment for the risk.
 - For the insurance risk: the current assumption in ICS is risk-free + 500bps.
 - For the default risk according to assumption 2): the market price for default risk i.e. the spread of the instrument that hedges the risk.

The market price of default risk – an crash course in Portfolio Credit Default Swap (PCDS) pricing



- A PCDS is financial instrument equivalent to a multi-year sequence of annual stop-losses covering the default loss of a fixed income portfolio
 - multi-year means during the run-off of the investment portfolio
- How does it translate to the investors' default risk cost?
 - The investor has underwritten the retentions of the stop-losses
 - The policy-holder holds the excess layers of the stop-losses

Aggregation with insurance risk ... the gist of it, but still a bit technical ...

- We just need to know the minimum amount of return asked for by the investor.
- Therefore we can assume that the investor carries the insurance risk first and asks the return corresponding to the 500bps for it.
- *Contingent* to the insurance loss, the capital left to cover the default loss is
 - larger than the total capital if the insurance loss smaller than expected or
 - smaller than the total capital if the insurance loss smaller than expected.
- Only the remaining capital is at risk for an investment default loss – in other words: instead of a fixed 1/200 limit, the limit can vary.
- Technically, the different PCDS prices are weighted with the probabilities of their occurrence.

➤ The cost for the default risk does not get reduced, at least not significantly, by aggregating it with insurance risk.

➤ More than 85% of the asset spread needs to be provided to the investor.

... enters the tax man

- The MOCE is the pre-tax balance sheet position corresponding to the return expected by the investor.
- The return to the investor is post tax. Thus it needs to be grossed-up by the corporate tax rate.
- Assuming a corporate tax rate of 25%, the annual components of the MOCE corresponding to the default risk are about 110%-133% of the asset spread.
- Therefore the default risk related part of the MOCE is 110%-133% of the value difference between the risk free investment portfolio and the default prone portfolio.

➤ Employing a credit default prone asset portfolio to match the liabilities increases the value of liability, which proves assertion a).

Required Capital

The credit spread sensitivity of MOCE

- The MOCE can be segregated into the unchanged insurance MOCE and the default MOCE, see slide 11
- The default MOCE is about 110%-133% of the value difference due to the asset spread, see slide 12
- There for its spread sensitivity exceeds the spread sensitivity of the assets.
- While the spread sensitivity of the investment portfolio and the Current Estimate of liabilities exactly cancel, the spread sensitivity of the MOCE remains.
- It enters into the required capital.

➤ Employing a credit default prone asset portfolio to match the liabilities increases the spread risk and thus increases the total required capital, which proves assertion b).

Summary what has been proven

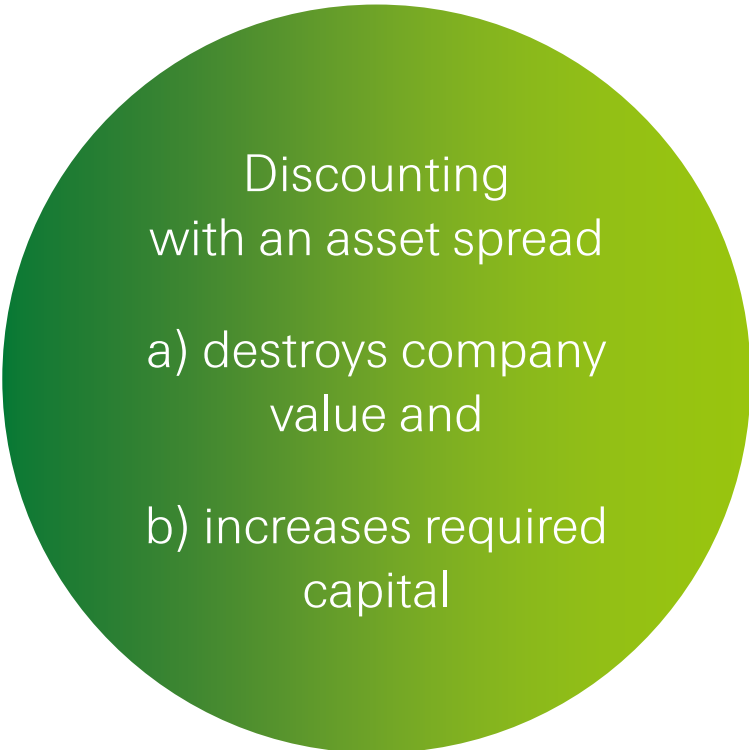
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