



# Calculating Economic Capital (EC) for Trade Credit Insurance

Marco van der Burgt

Eurobanking 2009

Duesseldorf/ Mettmann, Germany

17th – 20th May 2009

EUROPEAN WORKING GROUP on OPERATIONAL RESEARCH in BANKING



# Agenda

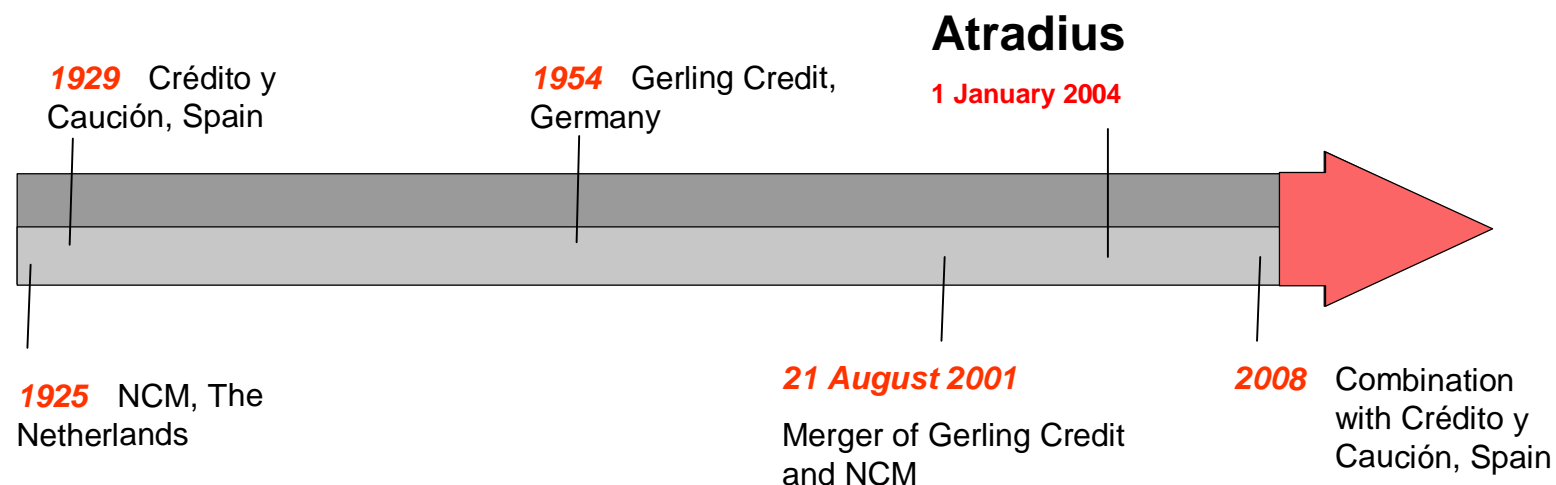
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1. About Atradius.
2. Principles of Trade Credit Insurance (CI): how does it work and who are the parties involved?
3. Examples of differences between Trade Credit Insurance and Corporate Finance / Lending:
  - Risk sharing mechanisms.
  - Dynamic Exposure Management.
  - Different loss triggers.
  - Reinsurance.
4. Examples of challenges in calculating Economic Capital (EC) for a Credit Insurer.
5. Conclusion.

# 1. About Atradius

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- n Atradius is one of the world's largest Credit Insurers.
- n Mission: managing risk, enabling trade.
- n 160 offices in 42 countries across the globe, about 4000 employees, S&P rating: A- Moody's rating: A2.
- n History:

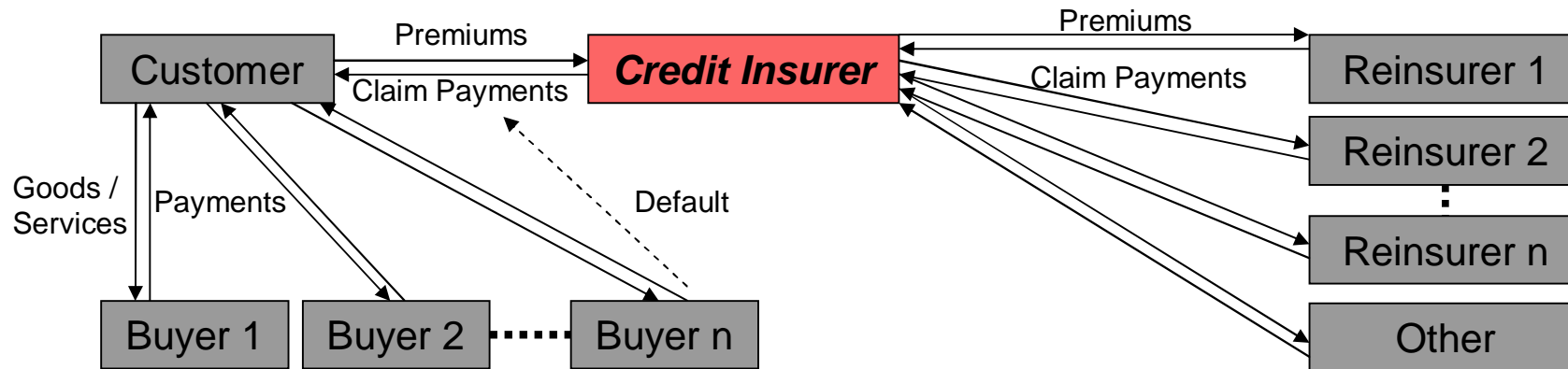


## 2. Principles of Trade Credit Insurance (CI)

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- n (Trade) Credit Insurance helps to protect policy holders against the consequences of defaults of trade creditors on trade receivables.
- n Customers of this product are business-to-business companies small and large, that sell products or services on credit terms domestically and / or internationally.
- n World wide Credit Insurance revenues are approximately EUR 4.6 billion. The three largest insurers active in this market, Atradius, Coface, and Euler-Hermes make up 85% of this market.
- n Modelling the credit risk of a large Credit Insurance portfolio comes with its unique challenges, some of which we will address here.

## 2. Principles of Trade Credit Insurance (CI)



Customer: the Credit Insurance policy holder.

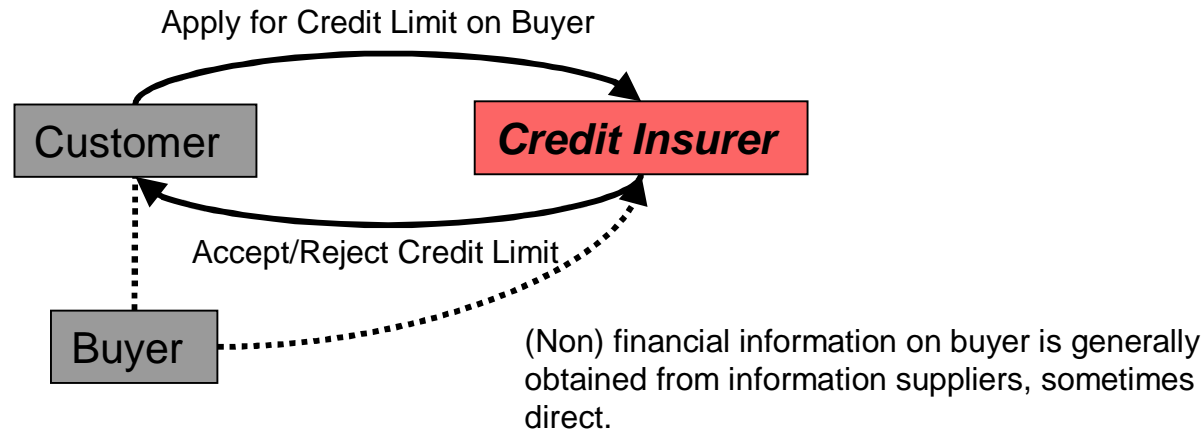
Buyer: the customer's customer for which trade credit was extended by the Credit Insurer.

Examples of risk mitigation at product level:

- n Policy wording requires customers to manage trade credit prudently.
- n Non-conformance can be used as a reason to refuse claim payment.
- n Policies have Risk-Sharing Mechanisms ensuring alignment of interests of the insured with the insurer.
- n Claim payment only after loss of trade receivables is proven.

## 2. Principles of Trade Credit Insurance (CI)

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- n The Credit Insurance policies merely specify the general conditions of the cover, the cover itself is given by the credit limit.
- n For small amounts (typically 10-20kEUR), customers can establish credit limits themselves. For larger amounts, the customer has to apply for a Credit Limit with the insurer.
- n “Vanilla” Credit Insurance does not allow adverse selection: all buyers need to be offered for insurance.
- n To manage his potential credit exposure, the Credit Insurer is allowed to cancel granted credit limits at any point in time.
- n Exposure accumulation is not at level of customer, but at the level of the buyer.

### 3. Differences between CI and finance / lending

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#### Risk-Sharing Mechanisms:

- n A Risk-Sharing Mechanism is the amount of loss the Insured agreed to bear himself with the Credit Insurer.
- n Risk-Sharing Mechanisms are applied to ensure that the interests of insured and the insurer remain aligned.

#### Examples of Risk-Sharing:

- n *Aggregated First Loss (AFL)*: the amount of loss aggregated over all claims on the policy that has to be absorbed by the insured himself before the Credit Insurer will start paying out on any claim amount.
- n *Insurer Maximum Liability (IML)*: the maximum amount that the Credit Insurer is committed to pay out in claim payments on a particular policy.
- n *Cover Percentage*: the Credit Insurer pays out a portion of the customer's insurable loss. Nearly always used.

### 3. Differences between CI and finance / lending

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#### Dynamic Exposure Management

- n Dynamic Exposure Management: due to the fact that the insurer can cancel exposure at any time, therefore the effective time to maturity is very short (2-6 months).
- n Credit Insurance specific EAD\*LGD calibration.
- n Credit Insurance specific correlation calibration (discussion to follow).

#### Different loss triggers

- n Default on trade receivables is different from default on loans.
- n Credit Insurance specific calibration of Probability of Default (PD).

### 3. Differences between CI and finance / lending

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#### Reinsurance

Why reinsurance?

- n Reinsurance is “insurance for insurers”.
- n Reinsurance increases underwriting capacity of the insurer.

Atradius: a substantial amount of risk is transferred to a panel of reinsurers.

- n Reinsurance reduces Atradius’ portfolio credit risk hence decreasing Atradius’ economic capital requirements.
- n Reinsurance gives rise to counterparty risk.

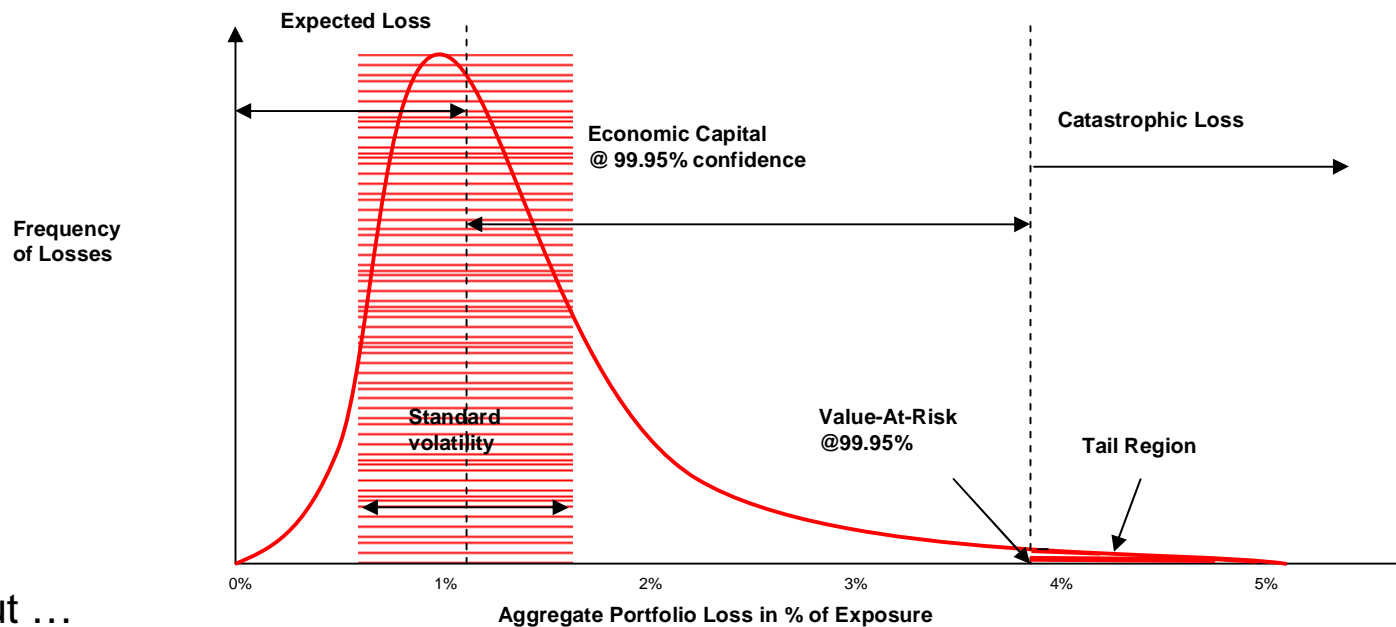
#### Examples of reinsurance treaties:

- n *Quota Share*: the reinsurer assumes a % of a particular risk of the insurer in exchange for the same % of the premium.
- n *Excess of Loss*: the reinsurer covers the loss in excess of an amount (attachment point) up to an agreed cover limit.

## 4. Challenges in EC calculation for a Credit Insurer

In principle, EC is calculated similarly to a portfolio of credit risky assets:

- n Run a huge number of scenarios
- n In each scenario, a number of buyers default and cause a loss in the Atradius' portfolio
- n Correlation between buyers is included
- n The losses are used to construct a loss distribution. EC is derived from the loss distribution:



## 4. Challenges in EC calculation for a Credit Insurer

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- n The Credit Insurer is allowed to cancel or reduce exposure at any moment.
- n As a result of this, the EAD\*LGD estimate for Credit Insurance is very low (~10%): Credit Insurance exposure is typically unsecured.
- n The impact is not limited to a per-transaction effect: In reaction to external development on a global, country, or sector level Credit Insurers cancel/reduce exposure in a targeted fashion.
- n Because the insurers can effectively react on a time-scale shorter than a year, one can expect the correlation between losses to be smaller than one-year default correlations.
- n The challenge is to calibrate a credit risk model with significant impact of management action.

## 4. Challenges in EC calculation for a Credit Insurer

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Calibration of correlation:

- n Atradius has chosen to adopt an asset correlation model based on a commonly used vendor model as the basis.
- n The management action as described could in principle be modelled explicitly. This may create more calibration problems than it solves.
- n We have opted for considering the  $R^2$  values to reflect the correlation between losses and not defaults whereby the effect of dynamic exposure management is implicitly included into the  $R^2$  values.
- n For correlation calibration, Atradius scales the  $R^2$  values for the SMEs, such that historic portfolio volatility in claims ratio (loss / premium) is matched.

## 5. Conclusion

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1. At a high level of abstraction, risks in Credit Insurance are similar to a portfolio of credit risky assets.
2. Modelling approaches towards EC can therefore be very similar.
3. However, the following CI features need to be specifically captured:
  - n Risk sharing mechanisms.
  - n Reinsurance.
  - n Different loss triggers.
  - n Dynamic Exposure Management.

