

# The Loss Given Default in Credit Insurance: Summary

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## Abstract

The present PML study investigates the loss given default (LGD) in the trade credit insurance market for large risks (exposure higher than 500'000 Euro). The resulting mean market LGD of 9.5% is mainly determined by exposure reduction prior to settlement of the claim with the customer (pre loss scenario). An intense sensitivity analysis showed that screening of the data is the major part to obtain reliable results.

## 1 Introduction

In trade credit insurance, the ratio of the loss to originally granted limits for the policies covering a defaulted buyer is a crucial parameter for loss models describing credit insurance.

In 2002 the idea of a common study that shows the risk in trade credit insurance was born. In a preliminary study, called the "PASA study", several credit insurers that cover a large portion of the credit insurance market were asked to deliver their 30-50 major losses for a joint analysis. That study showed a LGD of 14%, but due to problems in the data collection scheme, this result was considered to be of intermediate reliability.

The present PML study was initiated by the PML Working Group. Thirteen insurance companies that cover a major part of the "trade receivables credit insurance" business worldwide have delivered data and additional insurers and reinsurers shared their knowledge and worked within the PML Working Group. The data collection process has been revised so that the results of the PML study are reliable and representative for the market. Furthermore only cases with exposure above 500'000 Euro are taken into account (large cases).

Typically in credit insurance, the policy document defines the conditions of the coverage, and the separately issued credit limits per buyer, the "granted limits", determine the maximum insured amount per counter party of the customer. In case of a default of a buyer, the supplier lists the outstanding receivables that this buyer owes him, which adds to the "total claim amount". The insurer settles the claim in accordance with the conditions set out in the policy. There may be recovery actions with the buyer bringing the loss amount net of recoveries down to an "ultimate loss".

## 2 Model

The steps just mentioned quantified in the following way:

- *Unstressed granted limits (Glimit)*: Granted limit only changes rarely. The “unstressed” granted limits have been specified as “the maximum of granted limits in a two year period before default”. The amount that the buyer owes to the supplier at any time is called the “used limit” and equals the total claim amount that will be in effect when a buyer defaults including the policyholders retention. It will fluctuate and should generally be lower than the granted limit.
- *Reduction of granted limit*: The credit insurance policy allows the insurer to reduce and even cancel credit limit at any point in time in case of signs of potential financial difficulties of the buyer, possibly in several steps.
- *Default occurs ( $T_D$ )*: The supplier files a claim. This ends the so-called  $\alpha$  phase of managing granted limits, and starts the omega phase of handling claims.
- *Total Claim Amount*: The total eligible claims is the sum of all claims for a buyer net of the retentions of the policy holders.
- *Claim handling*: The claim is settled with the customer, after which the insurer can continue its recovery actions with the buyer.
- *Ultimate loss (UL)*: At the end, after closing the case, the ultimate paid loss is known.

This scheme of phases is shown in Fig. 1. There are, of course, cases which do not fit precisely into this model.

## 3 Results

The main target of the study is to calculate the loss given default (LGD) which is

$$\text{LGD} = \frac{\sum_i \text{UL}_i}{\sum_i \text{Glimit}_i} = 9.5\%$$

We can also show the precision of our results. The confidence interval for the LGD is

$$9.5\% \pm 2.78\% = [6.7\%, 12.3\%]$$

The LGD distribution is shown in Fig. 2. Detailed analyses suggest a large insurers have a smaller LGD than small insurers. This might be an effect of the different capacities to monitor the buyers in their portfolio. Furthermore we focused on large cases which means buyers that had an exposure larger than 500'000 Euro. For large insurers a buyer with 500'000 Euro exposure is small while for a small insurers this can be a major case.

A finer separation into different regions was not possible due to the confidential nature of the data and because there were only a few cases outside of Europe.

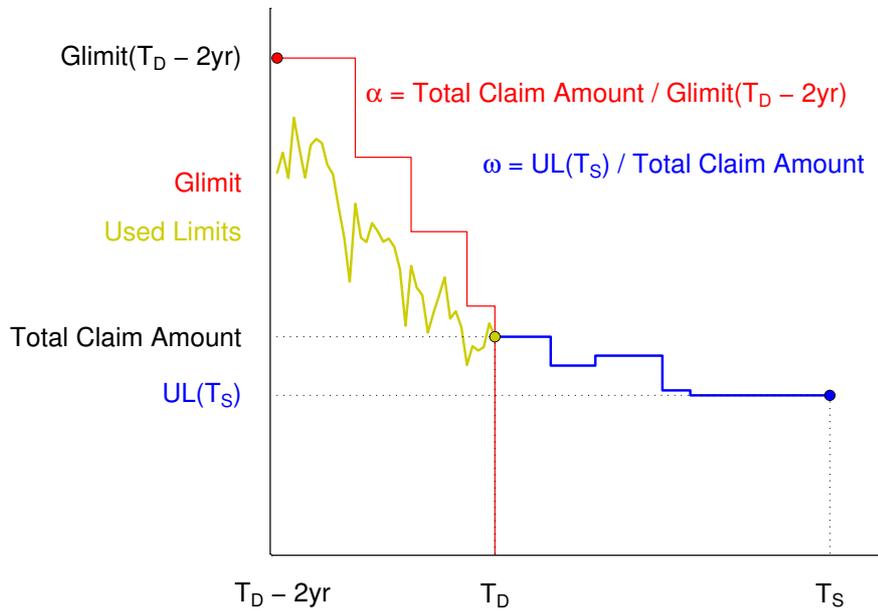


Figure 1: Model: The figure shows the two phases ( $\alpha$  and  $\omega$ ) that lead to the ultimate loss. The yellow curve are the used limits that cannot be observed. We only know the red curve, the granted limits.

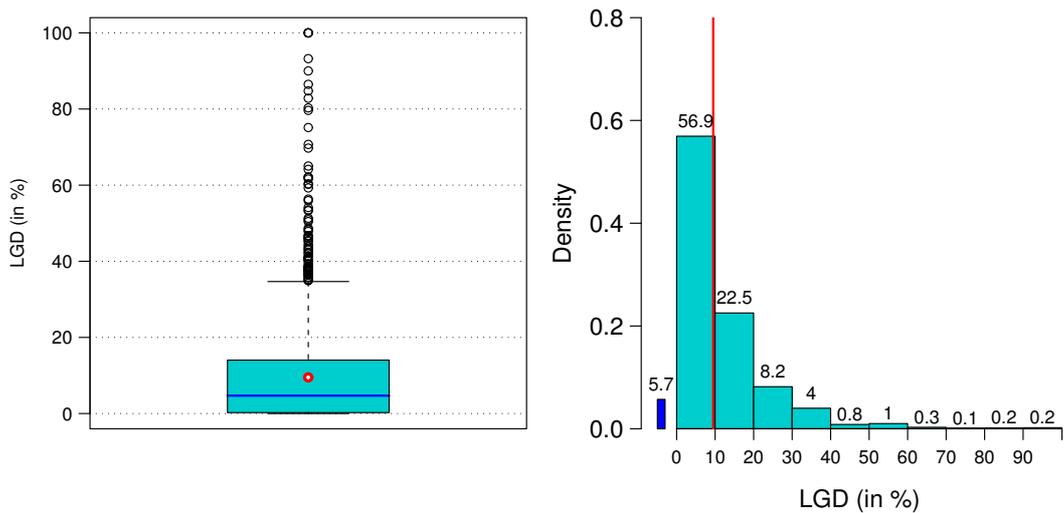


Figure 2: Weighted LGD distribution: The red point within the box and the red line in the histogram show the weighted mean market LGD which is 9.5%. The distribution is skewed. The median is 4.7%.

The separation into  $\alpha$  and  $\omega$  phases (Fig. 1) showed that  $\alpha = 12.7\%$ , which is thus the main contributor to a small LGD. Whereas the  $\omega$  phase ( $\omega = 74.8\%$ ) shows close similarity with other kinds of finance insurance, the  $\alpha$  phase is specific for the credit insurance business studied here.

Sensitivity analyses showed that the results are not sensitive to the length of the time period (2 years) used to define the granted limits. On the other hand, the results are highly sensitive to the quality of the data base. An intense screening procedure was necessary to ensure that only true defaults were included. Questions about the definition of a default have to be answered so that all participants provide the same variables, and that it agrees with its counterpart, the probability of default, that is needed to assess the risk in the whole business.

## 4 Conclusions

- The LGD (9.5%) is somewhat smaller than in the first PASA study (14%). The difference is most likely due to the unsystematic data collection in the first study.
- The  $\alpha$ -phase, which is a pre loss scenario, plays the dominant part in determining the loss. In this phase, the granted limits are reduced.
- If one wants to combine the loss given default (LGD) with the probability of default (POD) for a risk calculation, one has to make sure that the same definition of default is used for the two measures. Otherwise the combination of the two measures is not meaningful.
- Screening of the data is essential. Not defaulted cases that are treated as defaults lead to a systematic bias in the sense that the estimated LGD is too small.
- For studying the time development of the LGD, more data is needed. Our data base includes the loss period April 2005 until June 2007.