Insurance Guarantee Schemes: a credit portfolio approach to estimating potential exposures and funding needs for Europe

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The financial crisis of 2008-2009 and the recent insurance crisis in Greece are spurring new interest on consumer protection mechanisms in the insurance market, in particular on Insurance Guarantee Schemes (IGS).

In this paper we present a way to assess funding needs for a system of European Insurance Guarantee Schemes. It is based on the idea that, as an IGS is protecting the public from insurers' default risk, its exposure can be evaluated by using standard portfolio default risk models. In particular, as single factor portfolio models can provide approximate estimates based on a minimal set of parameters, we illustrate how to employ a Vasicek model to estimate Value at Risk of an IGS.

We also discuss how this model's parameters can be calibrated taking into account Solvency II capital requirements for the life insurance sector by using publicly available aggregate data and results from the literature on defaults. The results are then tested for coherence with historical data and current funding of IGS covering life policies.

Our results point to the fact that, in order to offer customers unlimited protection from default risk of their life insurance in 99.5% of all cases, a fund size equal to 2.21% of gross premiums written would be needed on average in European countries. The fund obtained using our model with a confidence level of 75%, would have been sufficient to cover the historical failure in the German life insurance sector. Moreover, where an IGS is already in place, according to our model the currently available funds would be able to cover policyholders against all losses with a confidence level close to 90%.

It can be concluded that the proposed methodology is able to offer an indication of the size of potential exposures and funding needs in European countries. The model also allows to analyze the adequacy of the existing funds of IGS covering life policies.

Keywords: Insurance Guarantee Schemes, Value at Risk, Vasicek model
Main references:

1. CEIOPS, 2008. CEIOPS´ Report on its fourth Quantitative Impact Study (QIS4) for Solvency II. Frankfurt am Main, Germany: CEIOPS, November.

2. Oxera, 2007. Insurance guarantee Schemes in the EU: comparative analysis of existing schemes, analysis of problems and evaluation of options.

3. Vasicek, Oldrich Alfons, 1991. Limiting loan loss probability distribution. *KMV corporation*, August.

4. Vasicek, Oldrich Alfons, 2002. The distribution of loan portfolio value. *Risk*, December.

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