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Designing sound deposit insurances

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Abstract

Deposit insurances were blamed for encouraging the excessive risk taking behavior during the 2008 financial crisis. The main reason for this destructive behavior was "moral hazard risk", usually caused by inappropriate insurance policies. While this concept is known and well-studied for ordinary insurance contracts, yet needs to be further studied for insurances on financial positions. In this paper, we set up a simple theoretical framework for a bank that buys an insurance policy to protect its position against market losses. The main objective is to find the optimal insurance contract that does not produce the risk of moral hazard, while keeping the bank's position solvent. In a general setup we observe that an optimal policy is a multi-layer policy. In particular, we obtain a close form solution for the optimal insurance contracts when a bank measures its risk by either Value at Risk or Conditional Value at Risk. We show the optimal solutions for these two cases are two-layer policies.

Key words: Deposit insurance, solvency, risk measure and premium, Black-Scholes model, moral hazard, VaR, CVaR, stop-loss

1 Introduction

An important lesson from the 2008 financial crisis is that an underestimated moral hazard risk can be destructive. Whilst this fact was widely known in insurance, it is rather new for insurances in the banking industry. A moral hazard is a situation when some agents take excessive risk because the costs of taking risk is not felt by them. In other words, a moral hazard occurs since some agents know the potential costs of taking further risk will be borne by other agents and/or the government.

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