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Securitization of Motor Insurance Loss Rate Risks

In an attempt to transfer the loss rate risks in motor insurance to the capital market, we use the tranche technique to hedge the motor insurance risks. This paper illustrates AXA and their securitization of French motor insurance in 2005 as an example. Though this application is new, this transaction is based on a concept similar to CDOs. Tranches of bonds are constructed on the basis of the expected loss ratio from motor insurance policy holders' groups. As a consequence we develop motor loss rate bonds using the structure of synthetic CDOs. The coupon payments of each tranche depend on the level of the loss rates of the underlying motor insurance pool. We show the integral formulas for the loss tranche contract where the loss distribution is modeled with discounted compound Poisson process. Esscher transform is chosen for a risk adjusted measure change and Fourier inversion method is used to calculate the price of the motor claim rate securities. The pricing methods of the tranches are illustrated, and possible suggestions to improve the pricing method and the design of these new securities follow.