

Pricing Survivor Swaps with Mortality Jumps and Default Risk

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Abstract. A survivor swap (SS) is an agreement to exchange cash flows in the future based on a mortality-dependent index. Pricing survivor swaps means to determine the fixed proportional premium π which makes the initial value of the swaps is zero to each party. In order to price the mortality derivatives, such as SS precisely, an appropriate model to forecast mortality rate is necessary. The proposed model extends the Cox, Lin and Wang's (2006) model by considering mortality jumps and default risk simultaneously. Based on the collected data, we use the proposed model to price SSs, and in our simulated results, we find that the premium of SS is negatively correlated with the market price of risk and the jump frequency. Moreover, a stronger jump frequency will enhance the effect of market price of risk on the premium. On the other hand, the premium of SS is also found to be negative correlated with the market price of risk and the jump frequency at any level of default risks, but fixed the levels of market price of risk and jump frequency, a higher (lower) default risk will imply a lower (higher) premium.

Keywords. Survivor swap, mortality derivative, default risk, the Wang transform, mortality jumps.